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ABSTRACT

This publication provides schools and school districts in Wisconsin with guidelines for collaborative planning and ideas for a unified, rather than competing, approach to the delivery of information and technology programming. The chapters cover the following topics: (1) vision and purpose; (2) the collaborative team model, including district-level leadership, school-level planning, and grade-/subject-level collaboration; (3) improving student learning, including steps to an effective learning system, assessment and evaluation, and curriculum and instruction; (4) information and technology staffing, including roles and responsibilities, and staffing patterns and guidelines; (5) facilities and facilities planning, including library media center guidelines; (6) resources and tools for learning, including access, selection, Internet policies, and maintaining a collection; and (7) staff development and professional growth, including the role of the district information and technology team, the role of the school library media and technology team, and the role of teaching and learning teams. Several worksheets, checklists, and other planning documents are appended. A glossary is included. (Contains 50 references.) (MES)

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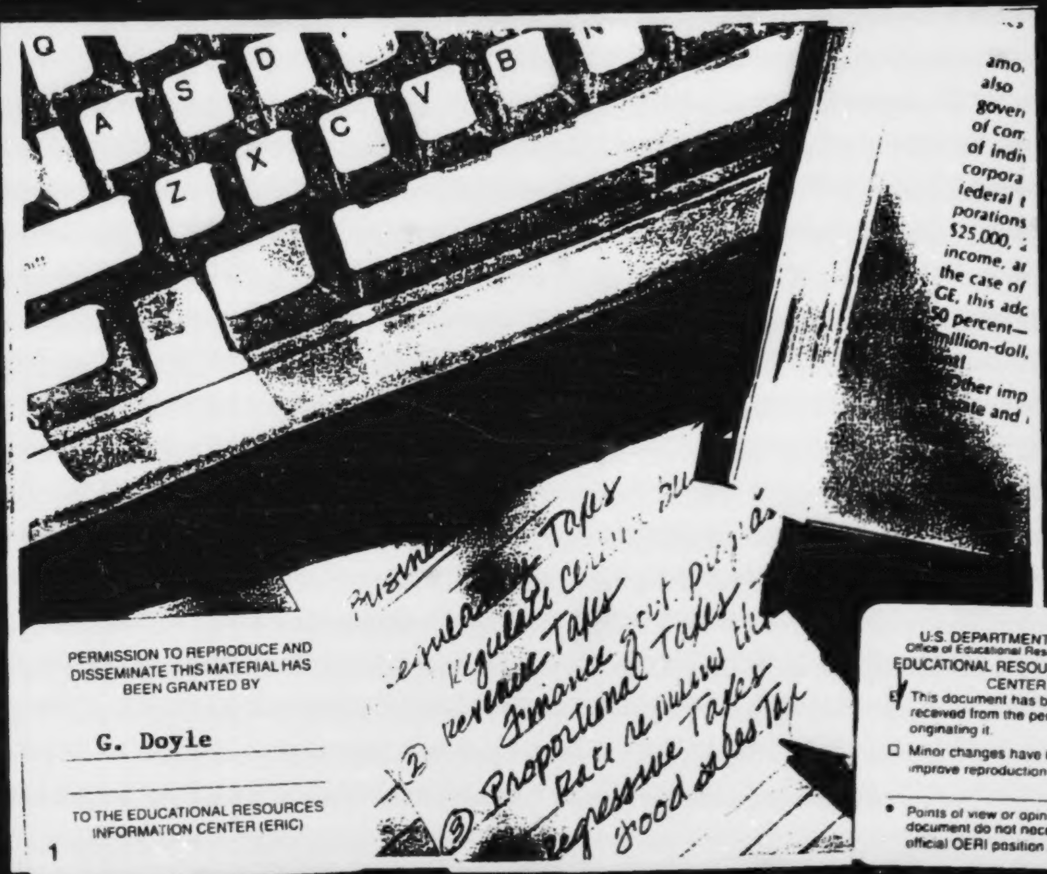
Information & Technology Literacy

A COLLABORATIVE PLANNING GUIDE FOR LIBRARY MEDIA AND TECHNOLOGY



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Information & Technology Literacy:

A Collaborative Planning Guide for Library Media and Technology

Calvin J. Potter
Assistant Superintendent
Division for Libraries, Technology, and Community Learning

Neah J. Lohr
Director
Instructional Media and Technology Team

Jim Klein
Consultant
Instructional Technology

Elizabeth Burmaster
State Superintendent
Wisconsin Department of Public Instruction
Madison, Wisconsin

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Foreword

Rapid change and new technologies are impacting what students must know and be able to do. Recently published national school library media standards, developed jointly by the American Association of School Librarians and the Association for Educational Communications and Technology, emphasize a new direction or focus from resources, to students, to creating a community of lifelong learners. The International Society for Technology in Education also recently published technology standards and guidelines for K-12 students, teachers, and administrators.

However, these excellent national efforts tend to segregate, or at least appear to separate, library media and instructional technology standards and the programs necessary to achieve them into two parts—one addressing information literacy and the library media program, and the other focusing on technology literacy and a district instructional technology program.

This new document, *Information & Technology Literacy: A Collaborative Planning Guide for Library Media and Technology*, is the third in a series of publications by the Wisconsin DPI promoting an integrated approach to information and technology literacy standards and the promotion of a collaborative or unified approach to the programming necessary to achieve the standards. All three publications were developed by broadly-based external task forces comprised of both educators and citizens, with leadership from DPI staff.

In 1998, the DPI published *Wisconsin's Model Academic Standards for Information and Technology Literacy* to help districts in teaching new information and technology skills and integrating these skills into the various subjects. To further assist with the integration of the new skills required for a global world, the department then published the *Information & Technology Literacy Standards Matrix* (2000) with an accompanying instructional CD-ROM. That document correlates the information and technology literacy standards with the academic standards in the curriculum content areas that are currently assessed.

The intent of this publication, *Information and Technology Literacy: A Collaborative Planning Guide for School Library Media and Technology,* is to provide schools and school districts with guidelines for collaborative planning and ideas for a unified, rather than competing, approach to the delivery of information and technology programming. We expect that this collaboration will result in equal access to knowledge and opportunity for improved student achievement in order to achieve the Wisconsin Promise.

Elizabeth Burmaster
State Superintendent

Acknowledgments

Information and Technology Literacy: A Collaborative Planning Guide for Library Media and Technology would not have been possible without the efforts of many people. Members of the task force, reactor group, and writing teams gave their time and expertise in developing this publication. In addition, their employing agencies – school districts and schools, libraries, professional associations, and cooperative educational service agencies (CESAs) – generously granted them time to work on this initiative.

Task Force

Rosalynn Kiefer, Chairwoman
Director of Instruction
Fox Point-Bayside Schools
Milwaukee, WI

Wayne Anderson, Superintendent
Mount Horeb Area School District

James M. Bowen, President
Wisconsin Educational Media Association
District Library Media/Audiovisual Coordinator
Green Bay Area Public Schools

Bob Carmack, Director
JDH Library
Associate Professor of Library Science
University of Wisconsin-Superior

Jo Ann Carr, Director
Center for Instructional Materials and Computing
School of Education
University of Wisconsin-Madison

Neil Duresky, Director
Region 6
WI Association of School Boards
Member, Board of Education
School District of LaCrosse

Jean Elvekrog, Librarian
St. John the Baptist School
Waunakee, WI

Susan Fulks, Director
Instructional Technology Services
CESA 5
Portage, WI

Becki A. George
Library Media Specialist
Rice Lake Area School District

Lynn Handler
Library Media Specialist
Menomonee Falls High School

Patricia Hill
Library Media Specialist
Wisconsin Rapids Public Schools

Pamela W. Kuck, Director
Instructional Technology Services
CESA 8
Gillett, WI

Pamela Penn
District Library Media Specialist
Milwaukee Public Schools

Karen Reusch
Library Media Specialist
Cuba City High School

Mel Selle
District Media Consultant *(ret.)*
Neenah Joint School District

Reactor Group

Carrie Cook
Elementary Library Media Specialist
Janet Berry Elementary School
Appleton, WI

Sue Conner, Director of Technology
Portage Community School District

Brandon Holt
Department of Information Technology
School District of LaCrosse

Laura Kremer
School Library Media Specialist
Superior Central Middle School

Vonna J. Pitel
IMC Director/District Media Coordinator
Cedarburg High School/School District

Donna Steffan, Director
Library Media
Beaver Dam Unified School District

Other Reviewers/Evaluators

Carolyn Cain
Library Media Specialist *(ret.)*
Madison Metropolitan School District

Eileen E. Schroeder, Associate Professor
Educational Foundations
University of Wisconsin-Whitewater

Richard Sorensen
School Library Media Consultant *(ret.)*
Wisconsin Department of Public Instruction
Madison, WI

Finally, a special note of thanks must go to the members of the Instructional Media and Technology (IMT) Team in the Division for Libraries, Technology, and Community Learning at the Wisconsin Department of Public Instruction. The IMT Team reviewed drafts of this publication several times, made invaluable suggestions, and provided ideas and input into the final document. Team contributors included the following educational consultants: Kathy Boguszewski, Stuart Ciske, Robert Roy, and Stephen Sanders.

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Introduction

1

> *We are living in a new economy—powered by technology, fueled by information, and driven by knowledge. The influence of technology will go beyond new equipment and faster communications, as work and skills will be redefined and reorganized.*
>
> — U.S. Department of Labor 1999

The beginning of the new century has seen dramatic changes in how students learn and what they are expected to know to become productive citizens and workers in a global society. In an environment in which the total volume of information on the planet is doubling every 18 to 24 months (Thornburg 1998, 13) and technology is providing increased access to previously restricted or unknown information sources, students face both difficult challenges and unlimited opportunities. The successful students of tomorrow will be self-directed lifelong learners with the ability to access, evaluate, and apply information and technology to solve problems; make informed decisions; and construct new knowledge, products, and systems.

The national standards for school library media programs outlined in *Information Power: Building Partnerships for Learning* (AASL/AECT 1998, v) clearly emphasize this new direction:

> The focus of school library media programs has moved from resources, to students, to creating a community of lifelong learners. Students and their learning remain at the core of library media programs and services, shaping the functions of school library media specialists. Effective teaching is today seen as a holistic process involving all aspects of student life and requiring continual assessment and feedback for meaningful learning.

Rapid change and new technologies are also dramatically impacting what students must know and be able to do. Cheryl Lemke, CEO of the Metiri Group, in the executive summary of *enGauge: 21st Century Skills* (2001, i) noted:

> Alan Kay, an Apple Fellow, humorously defines technology as "something invented after you were born." While the breakthroughs of any generation are historical fact to the next, today's accelerating rate of change magnifies generational differences. That differential dictates significant shifts in what today's students need to know and be able to do to thrive in the Digital Age. Therein lies the challenge—defining the 21st century skills, understanding the relationship of those skills to conventional academic standards, and, most importantly, recognizing the need for multiple assessments to measure such proficiencies within the context of both the academic standards and their application in today's technological, global society.

To achieve this success, professional school library media and instructional technology staff must become dynamic, collaborative change agents who work as integral partners with classroom teachers and school administrators. The task force believes that this leadership and collaboration will significantly improve the teaching and learning of basic information and technology process skills and result in a deeper understanding of curriculum content leading to higher academic achievement for all students.

Throughout this publication an attempt has been made to use terminology that is both descriptive and consistent. The terminology also reflects that used in *Wisconsin's Model Academic Standards for Information and Technology Literacy* (WDPI 1998). Thus, the terms "library media and instructional technology program" and "information and technology program" are used interchangeably. They refer to the total services, activities, and resources of a school district and/or a school library media and instructional technology program. To help readers unfamiliar with the changing library media and instructional technology landscape, we offer an extensive glossary following the appendix section.

Vision and Purpose

2

Student achievement must be improved in order to prepare students to succeed in the global economy. Many observers liken the need for a world-class, high-quality educational system to a national security issue. The United States can only remain a leading power in the global economy if it continues to ensure students will be be prepared to thrive in the future.

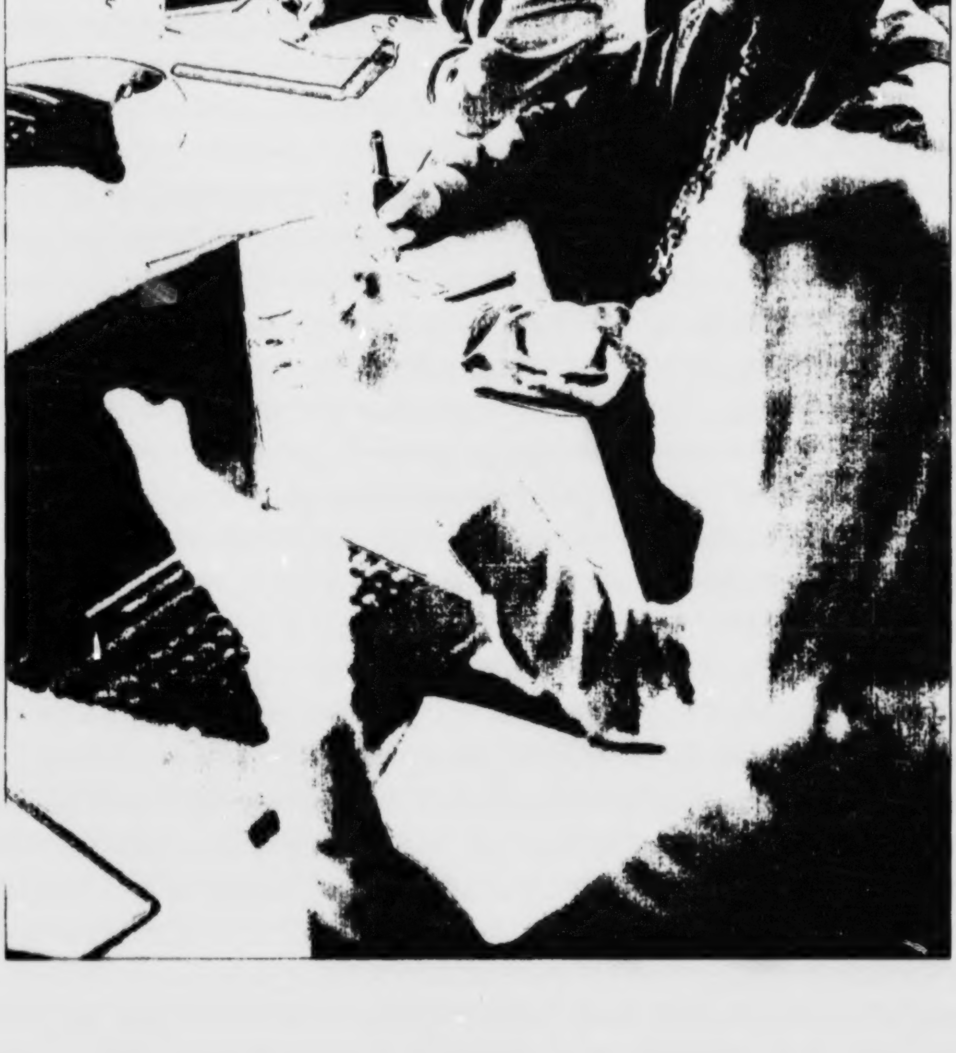
— CEO Forum 2001

Information and Technology Literacy: A Collaborative Planning Guide for Library Media and Technology presents a dynamic model for professional collaboration that will result in enhancing learning and improving student achievement. The authors believe that no one individual or single program can possess the total knowledge and expertise necessary to catapult schools into contemporary centers for learning. Only through collaboration can that goal be realized.

When educators share a vision for learning and then work together designing innovative and authentic learning tasks that incorporate relevant, up-to-date resources and powerful learning tools, student achievement can and will improve. A number of sections in this document identify compelling research that indicates the positive impact a strong library media and instructional technology program has on higher academic achievement. Research also supports the impact professional collaboration and high academic standards have on improved student achievement. According to Diane Ravitch's (1996) study, *National Standards in American Education: A Citizen's Guide*, student achievement improves when a school focuses on rigorous academic standards and provides for a climate that fosters collaborative efforts.

This publication provides guidelines and support to preK-12 districts and schools planning to optimize their information and technology services and resources in order to prepare their students to learn, work, and live in a knowledge-based digital society. The task force believes that the best way to maximize these services and resources is to unify or merge them. A unified information and technology program is indispensable to an active, engaged learning environment that facilitates student reading, reflection and research, problem solving, personal decision making, creativity, production, and performance. The charge of this unified program, in collaboration with the entire learning community, is to ensure that students demonstrate proficiency in the information and technology literacy and content standards of Wisconsin.

An effective information and technology program for students will foster an enjoyment of the pursuit of knowledge. The joy of reading, the pleasures of the written word, and the power of digital resources and learning tools can capture the imaginations and motivation of young people as they strive to do their very best on their journey to lifelong learning.



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The Collaborative Team Model 3

If schools want to enhance their organizational capacity to boost student learning, they should work on building a professional community that is characterized by shared purpose, collaborative activity, and collective responsibility among staff.

– Newmann, Secada, and Wehlage 1995

Today's new focus on accountability, standards-based learning, and student achievement is dramatically altering traditional educational programs and roles. The standards movement is demanding clear, more precise learning objectives that integrate and merge both content and process competencies for students. This focus on an integrated curriculum and on high levels of student achievement requires that teachers, library media specialists, instructional technology professionals, and other instructional staff work together on collaborative teams to address and resolve issues involving curriculum, instruction, and assessment.

Definition

This chapter addresses collaboration among the various components of the entire educational community at both the district and school levels. It focuses on how professional library media and instructional technology staff articulate with teachers and administrators in planning the overall information and technology program, helping teachers prepare and teach the units, and guiding students in learning activities and projects. The library media specialist's knowledge of resources and instructional design principles has always been important in developing innovative lesson plans and teaching strategies. That knowledge (and experience) will be even more valued and crucial in the future as library media specialists assume active roles and, at times, leadership roles on collaborative teams.

Likewise, the instructional technology professional's knowledge and expertise at using technology in teaching and learning is important to developing innovative, interactive lessons and units that incorporate the power of new technologies. Incorporating these new learning tools is especially important in a problem-based learning environment in which students are required to develop inquiry skills and create and produce new knowledge, products, or solutions using multimedia production systems or computers and productivity or presentation software.

The structural model recommended in this guide is the *collaborative team model*. Because the information and technology literacy standards impact every curricular area, collaboration is essential for a consistent and systematic integration of those standards into the school curriculum and classroom instruction. The old practice of teachers working in isolation—with little opportunity for serious professional collegiality to share ideas, observe each other teaching, or assist each other in professional development—is changing. Collaboration is "the only model offering the opportunity for sustainable systematic change in a school district. It depends on teachers teaching teachers, a continuous and integrated improvement effort, attention to individual needs, and a high level of ownership" (Reeves 1998).

This collaborative team model assumes that the library media and instructional technology programs are unified and function as a coordinated unit within a district or school (an important concept discussed in Chapter 5).

Operational Levels

The collaborative team model allows for three levels of operation for the library media and instructional technology program:

- District-level leadership (district information and technology team)
- School-level planning (school library media and technology team)
- Grade-/subject-level collaboration (teaching and learning teams)

District-Level Leadership

The district information and technology team is responsible for articulating a vision for integrating information and technology and developing the district's use of information and instructional resources and learning (technology) tools to help students meet all educational and developmental goals. One of its key responsibilities is developing formal districtwide documents, such as the comprehensive educational technology plan. Team membership for this activity should include the director of curriculum and instruction, the district technology coordinator, the district library media coordinator, other key administrators/principals, school library media specialists, instructional technology staff, and teacher representatives. In addition, parent/citizen/community input is necessary. Several federal grant programs require citizen/community input, including representation on the district information and technology team.

The district must also "have on file a written school board-approved long-range plan for library services development formulated by teachers, library and audiovisual personnel, and administrators" (Wis. Stat. 121.02(h); PI 8.01(2)(h)). While drafting this required plan (see appendixes A and B) is mainly the responsibility of the district library media coordinator and school library media specialist(s), it should be linked to, or integrated with, the district's comprehensive educational technology plan (see Appendix M). Both plans, or a combined plan, should be an integral part of the district's overall strategic school improvement plan.

An important district information and technology team responsibility is to develop a plan or process for determining where and when to incorporate basic competencies, identified in *Wisconsin's Model Academic Standards for Information and Technology Literacy*, into the curriculum. Though not a comprehensive listing, the following sample of important questions require district team discussion and resolution:

- What is the information and technology skill level of our students and staff?
- What library media and technology staffing is needed to implement and facilitate instruction in these skills?
- What are the roles of the library media specialist and other instructional technology staff in the district?
- What funding is necessary and/or available to carry out these plans?
- What technologies are appropriate for the various developmental levels and ages of students?
- What learning systems and technologies are needed to support the curriculum?
- At what grade level should students have the skills to evaluate and select print and electronic resources with minimal guidance?
- What do students need to know to move from assigned to self-selected groups or to independently determine when learning is best pursued individually or within groups?
- At what grade level should Internet access begin for students?

The board of education and district administrator constitute the governance level at which final decisions are made for the school system. Sometimes the administration and board modify plans or delay some of the implementation components. Nevertheless, most board decisions are based on recommendations made by district planning teams. Hence, these planning activities are important, since they set the course of action for the school district.

School-Level Planning

The school library media and technology team provides direction and defines implementation of the library media and technology program at the building level consistent with the district's comprehensive educational technology and long-range library services plans. Major tasks for building-based collaborative teams include:

- developing goals and objectives for the library media and instructional technology program

- identifying technology integration issues and seeking solutions
- clarifying the collaborative roles/responsibilities of library media and technology staff
- assessing progress toward achievement of local information/technology benchmarks for students
- evaluating needs and formulating recommendations for instructional resources and learning tools
- identifying technology deployment issues and possible facilities modifications
- identifying/addressing equity issues relative to student/staff access to technology
- evaluating/providing assistive technologies to meet the needs of special education students
- identifying staff development needs relative to technology integration
- detailing building needs and recommending solutions for inclusion in the district technology plan

A school library media and technology team usually consists of the building principal(s), 2-5 classroom teachers or other instructional staff, the library media specialist(s), and building technology staff. Appropriate district administrators (for example, the director of curriculum and instruction and/or district technology coordinator) should be invited to participate in team meetings at which significant changes to current technology use and/or direction are on the agenda.

Grade- / Subject-Level Collaboration

Teaching and learning teams consist of classroom teachers and professional library media and/or instructional technology staff who collaborate to plan and teach units and lessons incorporating informational/instructional resources and technology tools. Creating these teams might be as simple as adding professional library media and/or instructional technology staff to existing teacher or grade-level teams. Recent studies document the importance of library media specialists working directly with teachers on instructional units. For example, a Colorado school library research study (Lance, Rodney, and Hamilton-Pennell 2000, 78) concluded:

> A central finding…is the importance of a collaborative approach to information literacy. Test scores rise in both elementary and middle schools as library media specialists and teachers work together. In addition, scores also increase with the amount of time library media specialists spend as in-service trainers of other teachers, acquainting them with the rapidly changing world of information.

In designing classroom lessons, strongly crafted and well-integrated objectives, activities, and assessments involve multiple experts. Thoughtful, realistic integration of academic content and information and technology literacy standards happens best through collaboration.

Different individuals in different settings can fulfill the several roles needed on these teams. Academic-content experts define content, objectives, and their sequence as well as the depth of their coverage. Information and technology experts suggest resources and tools and their possible use and organize, provide access to, and select information resources. Information literacy experts coach teachers and instruct students in information seeking and technology skills. Together the teaching and learning team reviews standards, creates benchmarks, develops or selects assessments, and designs instructional strategies and activities. After presenting the unit, collaborative review and reflection in light of student performance brings the team of designers together again for revision and refinement. (See Appendix C for an example of a collaborative lesson-/unit-planning template.)

A library media program focused on improving student achievement in classroom studies requires a flexible schedule. Flexible scheduling "structures" library media center usage so that blocks of time exist when students may come individually and in small groups for independent research or recreational pursuits. Classes should not be regularly scheduled in the library media center to provide teachers with planning or preparation time. A flexible schedule will also provide the library media specialist with the time needed for planning collaboratively with individual teachers as well as working with groups of students on a scheduled or informal basis.

In an active learning environment, students must be able to come to the library media center throughout the school day to use information sources, to read for pleasure, to work on individual and group projects, and to meet with other students and teachers. Likewise, for the collaborative team model to function effectively, library media specialists must have flexible scheduling patterns for the media center so that they are able to work with teaching and learning teams, participate on curriculum committees, and serve on school and/or district information and technology teams.

Improving Student Learning

4

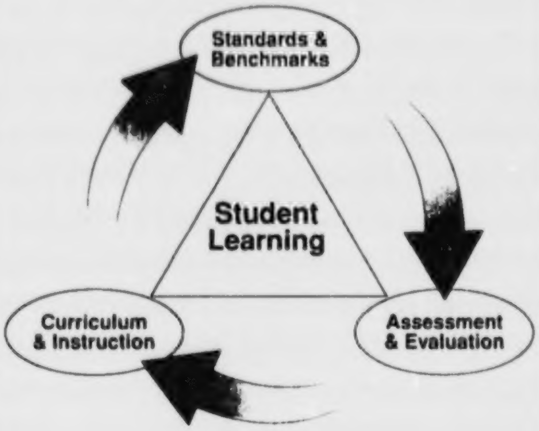
Learner-centered environments include teachers who are aware that learners construct their own meanings, beginning with the beliefs, understandings, and cultural practices they bring to the classroom. If teaching is conceived as constructing a bridge between the subject matter and the student, learner-centered teachers keep a constant eye on both ends of the bridge.

— National Research Council 2000

Learning does not occur in a vacuum. Students learn by actively exploring deeper concepts, ideas, or applications based on their current knowledge of a subject or skill. Active exploration is also nurtured by the development of an inquiring mind and an atmosphere that fosters independent as well as cooperative learning.

Recent advances in the study of the brain and current theories of how children learn are gaining the attention of preK-12 educators. According to the National Research Council, "A new theory of learning is coming into focus that leads to very different approaches to the design of curriculum, teaching, and assessment than those found in schools today" (2000, 3). Cognitive researchers are collaborating with practitioners in the classroom to bring relevance to their theories. As a result, educators are as much concerned with *how students learn and construct new knowledge* as with *how teachers teach subject-matter content*. Understanding how students learn as well as how teachers craft their lessons to optimize learning is critical to promoting high achievement.

Building the Learning System



The Learning System Model places student learning in the center and provides clear learning targets and pathways to achieve high learning expectations for students. These expectations are further defined through assessments that measure student content knowledge and performance. This on-going feedback on student performance drives the improvement process, thereby propelling systemic change in the curriculum and instructional practices within the school and district.

Steps to an Effective Learning System

Rosalynn Kiefer, president of the Wisconsin Association for Supervision and Curriculum Development (WASCD) and director of instruction for the Fox Point-Bayside School District, designed the *Learning System Model*, presented here as a graphic representation of the key elements in a

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student-centered learning environment. According to Kiefer's model, three steps are needed to build an effective learning system that increases student achievement. The first step—*standards and benchmarks*—identifies and articulates what students should know and be able to do, using state and national standards as guideposts. Standards provide a common goal and target for organizing instruction. District-level benchmarks add grade-level specificity to the academic standards. Academic standards tend to be more global and cover a range of grades. Wisconsin's academic standards, for instance, identify what students should know and be able to do by the end of grades 4, 8, and 12. Local school districts need to identify the content and process benchmarks expected of students on a grade-by-grade and subject-by-subject basis.

Most educators may see the second step in the *Learning System Model* as curriculum development and instruction. However, in a standards-based, student-centered model the next determination needs to be on the assessment and evaluation techniques or tools educators will select or create to show that the students have learned or accomplished what we want them to learn or accomplish. Therefore, *assessment and evaluation* identifies accountability methods and tools targeted directly to the benchmarks. These methods or tools measure student growth in content knowledge, information and technology literacy performance skills, communication skill progress, and product/performance development by individual students and student teams.

The third step—*curriculum and instruction*—invoves (1) identifying or developing content units, teaching activities, and resources needed to teach the standards and (2) selecting learner-centered instructional strategies to accomplish specific achievement targets. Finally, during and after instruction it is critical to allow time for staff and student reflection. Reflection is the process that will lead to changes and improvements to the same (or similar) lessons in the future.

Standards and Benchmarks

By 1998 the Wisconsin Department of Public Instruction completed the development and publication of academic standards for 18 curricular areas as a model for all Wisconsin public school districts. In 1999 most school districts adopted the state standards; a few districts made modifications to some of the standards to address local educational needs and priorities. Developed by task forces composed of Wisconsin educators, parents, and community representatives, academic standards specify what all students should know and be able to do by the end of grades 4, 8, and 12.

Wisconsin's Model Academic Standards

Agricultural Education
Art and Design Education
Business
Dance
English Language Arts
Environmental Education
Family and Consumer Education
Foreign Language
Health Education
Information and Technology Literacy
Marketing Education
Mathematics
Music
Physical Education
Science
Social Studies
Technology Education
Theatre

Academic standards in Wisconsin incorporate content, performance, and proficiency levels.

Content refers to what students should know and be able to do.

Performance describes how students will show that they are meeting the standard.

Proficiency identifies how well students are meeting the standard. Wisconsin has adopted four levels of proficiency: minimal, basic, proficient, and advanced.

An example of content, performance, and proficiency levels using *Wisconsin's Model Academic Standards for Information and Technology Literacy*

Content, Performance, and Proficiency Standards for Information and Technology Literacy

Content Standard B. Information and Inquiry

Students in Wisconsin will access, evaluate, and apply information efficiently and effectively from a variety of sources in print, nonprint, and electronic formats to meet personal and academic needs.

Sample Performance Standard

By the end of Grade 4, students will:
B.4.3 Locate and access information sources

Suggested Proficiency Standards for Performance Standard B 4.3:

Minimal:	The student recognizes that materials in the school library media center are arranged and organized in a systematic manner; the student is able to use a dictionary and can find some information with help using an encyclopedia.
Basic:	The student is able to locate materials using the classification system of the school library media center and can use the index or table of contents of a book, magazine, or reference set to locate specific information.
Proficient:	The student can identify and use printed or electronic catalogs to access materials in the school library media center and can search for information by keyword, author, title, and topic or subject.
Advanced:	The student can effectively use printed and electronic catalogs, databases, and reference resources and can locate information from preselected Internet sites and web pages.

is presented in the accompanying box. (Note: The four proficiency levels are not included in the published information and technology literacy standards; school districts determine those levels in conjunction with locally developed benchmarks.)

Two sets of standards (environmental education and information and technology literacy) are designed for integration into all curricular areas. A major focus of this publication is to define the responsibilities and roles of the professional library media and instructional technology staff as they work with teachers and curriculum coordinators to integrate the information and technology literacy standards into all content areas.

In order to design relevant classroom assessments and develop instructional units, professional library media specialists and instructional technology staff need to join with teachers and curriculum directors to establish curricular benchmarks consistent with state standards. They need to select or create assessment and evaluation tools to measure student progress in meeting the benchmarks.

Developing Benchmarks

According to Richard Stiggins (1997, 118-21), director of the Center for Performance Assessment at the Northwest Regional Educational Laboratory, standards and benchmarks should address four types of student achievement targets:

- A knowledge target addresses students' understanding of core concepts and facts.
- A reasoning target measures students' ability to reason and solve problems (analyze, synthesize, compare and contrast, induce, deduce, and so forth).
- A process target focuses on students' ability to demonstrate or perform a specific skill.
- A product target is students' ability to create a quality product or deliver a quality performance.

To measure comprehensive student achievement, applicable classroom assessment and evaluation tools need to zero in on each of these target areas. With these comprehensive tools in place the collaborative team can determine how well students are developing the critical-thinking skills identified and tested by Wisconsin's Knowledge and Concepts Examinations.

Wisconsin's Model Academic Standards for Information and Technology Literacy (WDPI) can help library media and instructional technology professional staff develop local benchmarks. The information and technology literacy standards identify and list from 3-8 performance indicators (bulleted items in standards) for each performance standard. These performance indicators are examples or sample benchmarks that schools can use or modify as they build their own benchmarks on a grade-by-grade basis.

Integrating Information and Technology Literacy

As noted earlier, the information and technology literacy standards are designed for integration into all content areas of the school curriculum. They cannot be effectively learned if isolated from academic content. These standards emphasize learning *with* information and technology rather than learning *about* information and technology. Integration will be varied and diverse based on individual school and school district curriculums. Implementing Wisconsin's model academic standards is the responsibility of all members of the school community; that is, they speak directly to a collaborative model.

Prior to the model academic standards *for students*, Wisconsin educators and educational policymakers developed and approved 20 educational standards *for school districts*. The 20 standards—half enacted in 1973 and half in 1985—fulfill a state constitutional requirement. Article X of the Wisconsin Constitution requires that the legislature create school districts "as nearly uniform as practicable" (Wisconsin Department of Public Instruction [WDPI] 1991, 1). The 20 standards established minimum expectations for every school district's education program. They continue to mandate specific expectations for the educational program of every public school district in the state.

Two of the 20 educational standards require integrating information and technology competencies and resources into curriculum and instruction. Standard (k) requires districts to develop, implement, and monitor curriculum plans for 12 distinct subject areas, including computer literacy. A part of the administrative rule (PI 8.01) for Standard (k) states, "Computer literacy objectives and activities shall be integrated into the kindergarten through grade 12 sequential curriculum plans" (WDPI 1991, 82). Standard (h) refers to school library media program services and states, "Each school board shall provide adequate instructional materials and library services which reflect the cultural diversity and pluralistic nature of American society" (see Appendix D). The overview portion of the law (WDPI 1991, 57) reads,

> Professional library media specialists at the building and district levels should provide the leadership for library media programs. A long-range plan is essential for planning systematic resource development from a qualitative as well as a quantitative standpoint. Library media specialists work with teachers in the selection of print and audiovisual media used in teaching. They also work with teachers in instructional planning through curriculum development and day-to-day instruction.

Thus, even from the earliest Wisconsin standards, it is clear that professional library media and instructional technology staff have been expected to play a central role in integrating information and technology literacy competencies into curriculum and classroom instruction. It is a task that requires ongoing leadership and collaboration from each member of the teaching and learning teams as well.

Assessment and Evaluation

Assessment and evaluation, the second component of the learning system, is essential to the ongoing improvement of teaching and learning in our schools. If educators cannot accurately assess what students know and are able to do in relation to the academic standards, they cannot determine and implement the changes necessary to improve the school curriculum and classroom instruction.

Assessment and evaluation, though different, are both important to measuring student learning. Clarifying the distinction also is important, especially as it relates to the roles of professional library media and instructional technology staff. The term assessment derives its meaning from the Latin verb *assidere* (literally "to sit down beside"). "Over time it has come to mean the careful judgment from close observation that results from sitting down beside someone. The visual image of assessment is facilitating in a collegial mode" (Donham 1998, 5). Assessment in this context answers the following questions:

- How will I know if students have met or mastered a specific standard or skill?
- How are students progressing based on the criteria we set for them?
- How will students show they understand the process of learning?
- How can we guide students toward becoming independent learners?

"Evaluate on the other hand lacks that collegiality in its etymology and instead means literally to place value. The visual image is judging in an authoritative mode" (Donham 1998, 5). Evaluation normally occurs at the end of a learning experience with the intent of assigning a value or "grade" to a student's work. Evaluation in this context answers the following questions:

- How can I quantify or place a value on what I expect students to know?
- How can I determine which students show minimal, basic, proficient, or advanced work?
- How can I rank my students to determine passing grades?

The library media specialist's involvement in this area is primarily with assessment and not with evaluation. *Information Power: Building Partnerships for Learning*, the national standards for school library media programs, clearly indicates the importance of assessment. "Assessment, in itself, is a vital learning experience that involves reflection and appraisal of learning. It is an integral part of the information literacy standards for student learning that encourages continual examination of both teaching and learning for improved student performance" (AASL/AECT 1998, 174).

Instructional technology professionals also need to participate in assessing student performance, especially performance related to using technology. Even when classroom lessons integrate technology, teachers tend to focus more on evaluating content knowledge than on evaluating effective use of technology. But in a society in which technology is now universal in the workplace, one's proficiency and comfort level in using technology is becoming vital to success in the occupations and professions of the 21st Century.

Information Power: Building Partnerships for Learning recommends five assessment tools or strategies—checklists, rubrics, conferences, journals, and portfolios—that teaching and learning teams can successfully employ. Periodic use of these assessment tools will help students become more proficient at using information and technology literacy skills in learning. As society changes, learning how to learn will become more important than recalling constantly changing factual information. One study (Sperling and Mahalak 1993, 39) noted, "Students recognize that performance assessment is not just a grade given at the end of work, but also a road map showing the path they must travel to improve their learning."

The following quotes and definitions are from *Information Power* (AASL/AECT 1998, 176-80). The five recommended assessment tools for measuring information and technology literacy competencies are:

"A checklist is given to students at the beginning of a research activity [or other student project] so that the criteria are clear from the beginning. A checklist is simply a guide that helps students attend to all aspects of the research process [or project activity]. It can include elements for the process as well as the product." Appendix E contains an example of a checklist.

A rubric is a scoring tool that lists the criteria for a product or presentation. It articulates what counts and details gradations of quality for each criterion. Normally, a rubric lists criteria in a column on the left; columns to the right of each criterion describe varying degrees of quality as concisely as possible. "A critical feature of rubrics is language that describes rather than labels performance. Evaluative words, like 'better,' 'more often,' and 'excellent' should not appear in rubrics. Instead, the language must precisely define skill or proficiency at that level." Wisconsin recommends four achievement levels—minimal, basic, proficient, and advanced—in a rubric design to assess proficiency in meeting academic standards. Appendix F contains an example of a rubric.

"**Conferencing** can take place on several levels, from very informal to formal with a sit-down conference and a hard copy report on the session. As students do research or work on projects, a member of the teaching and learning team can inquire about progress by asking questions specific to the students' task, so that feedback and guidance can be provided to them. More formal conferencing can occur at the end of a teaching sequence where students are asked questions that engage them in reflecting on their work, identifying what went well, and determining what they would change given the opportunity."

Keeping journals is a strategy "to cause students to focus, at least briefly, on the process as well as the content of their learning (project). Their entries into a journal can give the collaborative team a sense of how students are doing: this information may suggest mini-lessons that need to be taught next. Journal entries also help students at the beginning of the subsequent session to know precisely where they need to begin."

A portfolio "is a cumulative process in which samples of student work are collected over a period of time to demonstrate the learning and growth that has taken place. The student's portfolio must contain deliberate compilations, not casual collections of items. A portfolio is a documentation of student growth based on the student's learning goals established at the beginning of the portfolio compilation. The student's own reflection on his or her work is also an important aspect of portfolio assessment."

Schools that use these various assessment strategies to improve student achievement promote accountability by

- systematically monitoring student performance and achievement;
- collecting and analyzing the data to assess progress in light of their goals;
- collaboratively planning to design units and plan instruction; and
- fostering a climate of professional collegiality and dialogue focused on student performance.

Performance assessments that measure information and technology literacy are becoming more important as educators recognize that sound information-processing skills positively impact students' knowledge and understanding of content. In a rapidly changing, knowledge-based society, information and technology literacy competencies are especially important to promoting achievement and learning beyond the classroom as well as transfering to lifelong learning. The right assessment tools address not only a particular skill or process but also a student's ability to solve problems, think critically, and make informed decisions.

Library media specialists and instructional technology professionals need to bring to team planning meetings assessment ideas and strategies for the information and technology benchmarks addressed by a particular curricular unit. Research shows that instructional leadership by these information and technology educators, coupled with ongoing assessment of inquiry skills, foster higher student achievement on local and standardized assessment and evaluation tools (Lance, Rodney, and Hamilton-Pennell 2000).

Finally, a districtwide balanced-assessment framework is necessary to provide parents and the public with valid and reliable measures of student achievement and performance. Appendix G offers a recommended balanced-assessment framework for school districts.

Curriculum and Instruction

Curriculum and instruction is the third step or element in the Learning System Model. Curriculum and instruction represent the content—lessons and units, sequence, materials, and strategies—a teacher uses to help students attain what they need to know and be able to do as outlined in the model academic standards.

In order to prepare students for an Information Age that includes problem solving and critical thinking as well as effective technology skills, integrating information and technology literacy standards and competencies is critical. This publication recommends a systematic approach for organizing integrated instruction. The following chart outlines steps in the process.

1. Select relevant and related standards (academic content and information and technology literacy).
2. Determine grade-level benchmarks.
3. Determine assessments to meet the benchmarks.
4. Select instructional strategies and methods.
5. Select learning resources to meet the assessed benchmarks.
6. Select specific instructional activities.
7. Instruct and engage students.
8. Collect evidence of student performance—assessment, informal writing, quizzes, teacher observations, and student reflections—as the unit is taught.
9. Review evidence of student achievement.
10. Reflect and refine in light of standards expectations and student performance.

Curriculum

Curriculum is the program local school districts use to prepare students to meet standards. It consists of lessons and activities at each grade level, instructional materials, and oftentimes various instructional techniques. A standards-based curriculum specifies benchmarks for each grade level, based on performance standards identified in Wisconsin's model academic standards. The curriculum objectives and benchmarks include all essential content concepts as well as the information and technology skills students need to know to solve problems; make informed decisions; and communicate clearly when speaking, writing, or producing multimedia products. Standards and properly designed local benchmarks bring focus, consistency, and precision to the curriculum, while problem-based learning and ongoing assessment add relevance and depth to the curriculum.

Methods of Integrating Skills

To promote student achievement, the connection between content learning and information and technology process skills must be interwoven into every level of student learning. Students need many carefully planned opportunities to access, evaluate, and use information in all subject areas and in all formats. Integrating technology into learning is also critical because much information today is only available in electronic formats and will never be published in a printed format. Methods of integrating information and technology literacy competencies into the curriculum include the use of *curriculum maps* and *curriculum alignment worksheets*.

Curriculum Mapping

According to nationally recognized educator and author Heidi Hayes Jacobs, "Curriculum mapping is a systematic process that helps school teams consolidate information from curriculum, guides, and textbooks into a clear, succinct, and visual picture of what is happening in the school" (PEN/AASL 2001, 65). Curriculum mapping is important for building an integrated and standards-aligned curriculum in all disciplines for all students. Appendix H provides an example of a curriculum map.

A curriculum map offers a "snapshot" of the actual operational curriculum—at any level, in any classroom—and contains valuable data for potential collaborative units, collection development, and curriculum support. However, one of the most valuable assets is that it can pinpoint instructional units, activities, and lessons with potential for information and technology integration. This "topics" or "concepts" map provides the catalyst for library media specialists and instructional technology professional staff to work with individual teachers or teaching and learning teams to plan, design, and implement information and technology literacy into specific classroom units and lessons.

Curriculum Alignment Worksheets

Another approach to curriculum alignment reverses the curriculum-mapping process by beginning with the information and technology literacy competencies identified in *Wisconsin's Model Academic Standards for Information and Technology Literacy*. A companion publication on CD, *Integrating Wisconsin's Information and Technology Literacy Standards into the Assessed Curricular Areas: A CD-ROM Planning Guide*, includes a

Curriculum-Alignment Worksheet template containing all of the information and technology literacy competencies in a spreadsheet. Appendix I cites example pages from the template.

Grade-level (elementary) and subject-area (secondary) teachers, working with library media and/or instructional technology staff, can complete the spreadsheet indicating what information and technology literacy competencies are covered in each unit and the degree of coverage. A computer-merged compilation of this data gives a complete profile of what, where, and how well the current instructional program covers specific performance standards. The profile identifies excess repetitions and significant gaps so that appropriate adjustments can be made to the curriculum and to classroom instruction.

Instruction

When planning classroom instruction, teachers should ask,

- What strategies and activities will I use to teach the academic standards and the content of my subject?
- How can I find the time to collaborate with other professionals so that together we can integrate the information and technology literacy skills into lessons?
- How can we differentiate our roles and team-teach the various skills needed so our students become information and technology literate?

To facilitate integrating information and technology literacy standards into classroom instruction, educators need to collaborate on unit and lesson plan design. Quite often teams combine their various teaching strengths and skills to engage students in projects that bring a deeper understanding of major concepts in the unit theme. Problem-based learning, predicated on constructivist principles, is one of the vehicles that helps catapult students into becoming active, engaged learners.

Constructivist learning theory contrasts with the more traditional behaviorist learning theory that governs teaching practices in many American classrooms. Historically students listened, read textbook passages, and answered questions the teacher deemed important. Constructivist learning theory, developed by cognitive psychologists, refers to learning as "the active building of knowledge through dynamic interaction with information and experience" (AASL/AECT 1998, 2). The goal of constructivist learning is deeper understanding, not imitative behavior (Brooks and Brooks 1993, 16).

The teaching of inquiry is the foundation of collaboratively designed units. In *Inquiry and the Pathways Model*, Marjorie Pappas defines inquiry as "an investigative process that engages students in answering questions, solving real world problems, confronting issues, or exploring personal interests" (2000, 18). Pappas goes on to explain how traditional roles have evolved due to students' active and independent learning experiences. The teacher is no longer the sole information giver and fount of all knowledge but is instead the organizer of active learning experiences. In the collaborative team model, library media and instructional technology professionals no longer work in isolation, offering services on demand; instead they become full participants, sharing their special expertise with the entire teaching and learning team.

Information and Technology Staffing

5

> *[Library] media and technology specialists are critical in the Information Age school, and their role is twofold. Working with students, they are project facilitators . . . Working with teachers, they are instructional designers—partners in curriculum development and unit planning . . . And because ongoing professional development is an integral part of the work in the Information Age school, [library] media and technology specialists contribute their expertise to the design and delivery of technology-enhanced in-service programs.*
>
> — Hancock 1997

Today's educational practices and the requirements for access to information and for instruction in information and technology literacy have dramatically changed and expanded the performance expectations for professional library media and instructional technology staff. One person can no longer effectively handle all responsibilities; a team approach is essential.

Roles and Responsibilities

Collaborative teams (the three levels of which were described in Chapter 3) should model the systems approach to learning and focus all information and technology use on improving student achievement. All members of the school community are responsible for helping all students meet the academic standards, and all play an important role within the collaborative team framework. Because information and technology literacy skills impact every curricular area, participation of library media and instructional technology staff is especially essential.

Helping all students achieve the competencies found in *Wisconsin's Model Academic Standards for Information and Technology Literacy* requires a leadership role for library media and instructional technology professionals in designing instruction; providing resources, technology, and facilities; co-teaching; and guiding students in learning activities. The collaborative team model allows each team member to assume leadership and responsibility for various tasks based on the particular training, strengths, and expertise each possesses.

The knowledge, training, and expertise for planning and implementing a modern information and technology program in a school or school district falls into five categories—leadership and vision, student achievement and accountability, information and technology systems, staff development and professional growth, and operational management. Accomplishing these responsibilities requires knowledgeable staff. Staffing patterns to address these responsibilities vary from district to district depending on size and many other factors.

Leadership and Vision

Professional library media and instructional technology staff

- develop a vision for integrating information and technology literacy;
- build a collegial school learning community focused on improving learning for all students;
- serve as the catalyst for integrating information and technology literacy standards into all curricular areas;
- participate on district and school information and technology teams;
- support and promote local, state, and national standards and educational goals;

- support teaching staff willing to experiment with integrating technology into classroom instruction;
- promote broad educational-reform initiatives;
- promote intellectual freedom and equity of access;
- foster a spirit of critical reflection relative to teaching/learning;
- evaluate and promote awareness of emerging technologies; and
- articulate the district or school information and technology program throughout the community.

Student Achievement and Accountability

Professional library media and instructional technology staff

- participate in district and school curriculum development to integrate information and technology literacy standards into all content areas;
- develop local grade-level and content-area benchmarks based on standards;
- design learning strategies that meet individual student's needs;
- collaborate with staff to develop and implement authentic learning tasks aligned to standards;
- design performance assessments for standards-based units and lessons;
- promote and model effective use of learning resources in teaching;
- promote a lifelong love of reading and learning;
- promote an appreciation of literature and other creative expressions of information;
- support classroom reading instruction and reading for academic and personal success; and
- help students become critical users of ideas and information.

Information and Technology Systems

Professional library media and instructional technology staff

- plan, select, and implement information and technology solutions for instruction;
- design and implement a coordinated technical support system;
- ensure access to quality learning (technology) tools through a systemwide evaluation and selection process;
- participate in all information and technology budget decisions;
- manage the global information presence in the school and classroom;
- design and implement systems for producing media in various formats;
- participate in planning and designing learning spaces;
- provide a variety of learning environments conducive to student learning and exploration;
- promote resource sharing and participate in regional and global consortiums to expand access to instructional and other information resources for staff and students;
- provide distance-learning opportunities to expand educational opportunities for students;
- identify and provide access to assistive technologies for students with special needs; and
- provide for continuous improvement through periodic reviews of district and school information and technology systems.

Staff Development and Professional Growth

Professional library media and instructional technology staff

- provide professional development on integrating learning tools into instruction;
- help teachers integrate the skills found in *Wisconsin's Model Academic Standards for Information and Technology Literacy*;
- provide training on evaluating and using informational/instructional resources and learning (technology) tools;
- promote and model integrating information and technology literacy competencies into classroom units/lessons;
- assist staff to become critical users of ideas and information;
- promote and model literacy skills instruction;
- participate in regional, state, and global consortiums or distance-learning initiatives that expand staff development opportunities in information and technology integration; and
- inform staff about new and emerging technologies and resources.

Operational Management

Professional library media and instructional technology staff

- organize information for maximum accessibility;
- develop district and school policies for using resources and technology;
- provide an attractive, comfortable, technologically-rich learning environment;
- identify, select, acquire, organize, and facilitate access to information resources and learning tools that support the curriculum;
- install and maintain the technology infrastructure;
- train, schedule, supervise, and evaluate support staff;
- evaluate, select, and install required Internet filtering;
- provide flexible and equitable access to information resources and learning tools; and
- manage the circulation/distribution of information resources and learning (technology) tools.

Staffing Patterns and Guidelines

Effective information and technology programming is possible only if the school and district provide sufficient professional, technical, and clerical personnel to carry out the responsibilities listed in all five categories. A high level of expertise is required to evaluate, select, implement, and manage information and technology solutions. An even higher level of leadership and expertise is required to integrate information and technology literacy components into the curriculum and to design instructional practices that lead to improved student learning and achievement.

Appropriate staffing for information and technology programming in schools today is complex, must be adaptable to changing conditions, and requires a great deal of in-house collaboration. It likely will involve a mix of school and/or district library media and instructional technology personnel. The mix will require professional (that is, teacher-certified), technical, and clerical or support staff with appropriate expertise at addressing identified roles and responsibilities.

Staffing for these roles and responsibilities will be influenced by district instructional goals and objectives, state and national standards, size of the student population(s), and the sophistication or complexity of the total information and technology system components. In smaller districts, one person may have multiple responsibilities. In larger districts, a number of different positions may have specific and differentiated responsibilities. No one person can be an expert in every area; regardless of staffing size and organization, collaboration is absolutely essential to an effective information and technology program.

The Unified Program

Wisconsin school districts exhibit many models and patterns of leadership and coordination of information and technology programs. The library media and instructional technology programs in some districts are totally separate, while in others they are tightly integrated—in effect, one program. The collaborative team model, discussed earlier in this document, makes clear the importance of an integrated or unified approach.

The introduction to this publication stated, "The task force believes that the best way to maximize these (information and technology) services and resources is to unify or merge them." As never before, library media programs and instructional technology programs share common objectives, professional knowledge, and teaching methods as well as technology.

The massive influx of electronic technology, providing the entire school with access to the library media center and its information resources, is creating a true "library without walls." Libraries have always been early adopters of a variety of communication technologies, beginning with handwritten manuscripts; gradually adding books, audio and video recordings, and microfilm as they became available; and today using electronic media to connect learners to useful information. The field of instructional technology has always focused on helping learners learn more effectively, whether the equipment in question was a chalkboard or some form of electronic media.

Likewise, in today's world it is becoming increasingly difficult to separate or disconnect information—*media*—and technology—*medium*.

Much new information is only produced or published electronically and will never end up in a printed format. Thus, to maintain separate information (library media) and technology (instructional technology) programs in schools artificially divides resources and learning tools in a way not found in the workplace or in society as a whole. Separate programs can also create unnecessary competition among departments or programs or, worse yet, result in needless duplication of services, resources, and learning (technology) tools.

A well-coordinated program that provides library media and instructional technology services is more efficient. Staff members knowledgeable in both library media services and technology used in teaching and learning can more readily and effectively help teachers and students than a narrowly prepared specialist. The list of responsibilities outlined earlier in this chapter reveals how much professional library media and instructional technology staff draw on closely related knowledge and experiences.

Planning and directing library media and instructional technology services is more efficient when the person responsible is broadly prepared. In addition, such professionals or specialists working within a unified program can better integrate library media and instructional technology into teaching and learning across the curriculum, whether at the school or district level.

Clearly, a unified library media and instructional technology program—also referred to as a unified information and technology program—is the ideal.

District-Level Staffing Guidelines

Working with the administrative team, district-level professional information and technology staff are responsible for articulating a districtwide vision for the program and providing leadership to realize that vision. This includes (1) integrating information and technology literacy into the curriculum and (2) developing and supporting an instructional and technology infrastructure to meet curricular, instructional, and professional development needs.

A district's size and organizational pattern have a direct bearing on the personnel needed to lead information and technology. In some districts, the instructional technology coordinator may also be the coordinator for administrative computing. In other districts, separate leadership positions may exist, and the instructional technology coordinator will need to work closely with those responsible for administrative computing to meet the district's curricular and instructional needs. Many other districts have network administrators and other administrative computing personnel, and district library media and instructional technology leaders need to work closely with them.

A variety of other district-level information and technology staffing patterns exist across the state. In some districts, library media and instructional technology are separate programs led by different individuals. In others, one person has responsibility for all components of the information and technology program. A single leadership position may require district-level staff with expertise in different components of the program. The district might also contract with consultants (technical and professional) to design, implement, and manage technology networks, specialized technology systems, or other instructional services.

Smaller districts may assign information and technology leadership to an administrator or administrators with major responsibilities in other areas (for example, a curriculum coordinator or an assistant superintendent). This pattern requires the administrator in charge to assign specific responsibilities to a department head or program leader with expertise and licensure in a particular library media or instructional technology program area. To be effective, these department heads or program leaders will need sufficient release time to devote to districtwide coordination of their particular program area.

Currently, Wisconsin statutes require every school district to designate a district library media coordinator. Department of Public Instruction administrative rule PI 8.02(2)(h) for Wis. Stat. 121.02(1)(h) states, "A department certificated person in the library/media field shall be designated to provide direction and coordination for the district's library/media program" (see Appendix D). The library media coordinator generally completes the annual report, develops the long-range library media plan, coordinates building-level library media programming, proposes the library automation system(s) used in the district, participates in library facilities planning, and serves on appropriate districtwide committees.

The size of the district normally dictates whether this position is full- or part-time or requires some other designated release time to complete these duties. Individuals with this designation should be involved in the district-level planning process for library media and instructional technology and should serve on the district information and technology team. The district library media coordinator is required to have an instructional library media license but not an instructional library media supervisor license, unless the position supervises other library media professionals.

In addition to the current library media supervisor license, the Wisconsin Legislature (Chapter PI 34) has approved a new district-level administrative license for an instructional technology coordinator, effective in 2004 (see Appendix J). Individuals responsible for directing and administering district-level instructional computing and other instructional technology will be required to hold this license. The license will require experience in teaching as well as training in educational leadership, curriculum, technology management, staff development, standards, and legal and ethical issues related to technology use. In addition, the district instructional technology coordinator should have and will profit from training in library media administration.

As universities develop new academic preparation programs for the instructional technology coordinator license, significant crossover should occur between required coursework for library media licenses and required coursework for instructional technology coordinators. With that training and appropriate library media licensure, a combined information and technology coordinator would appear to be an excellent choice as districts plan and coordinate all library media and instructional technology programming.

In order to provide effective districtwide coordination for a unified information and technology (library media and instructional technology) program, the following district-level staffing patterns are recommended as general guidelines:

Small school districts: A district-level administrator or administrators (for example, a district administrator, curriculum coordinator, assistant superintendent, and/or district library media coordinator) may perform the various functions of an instructional technology coordinator. The administrator or administrators may delegate certain functions to the designated library media coordinator and other technology personnel with appropriate licensure and expertise in various information and technology areas.

Medium/large school districts: Districts of this size are likely to have either a full- or part-time certified instructional technology coordinator, depending on the size of the district and the range of information and technology programming. These districts should give strong consideration to establishing an integrated or unified information and technology (library media and instructional technology) program, with a single position responsible for leading and coordinating the entire program. The designated district library media coordinator with an instructional technology coordinator license or an educator with an instructional technology coordinator and a library media license could fill such a combined position. If the two program components are not combined, the instructional technology coordinator and the district library media coordinator should be expected to work together on matters relating to the library media program and technology integration into the curriculum.

Very large school districts: The largest districts in the state should give even greater consideration to having a unified information and technology (library media and instructional technology) program guided by a single appropriately licensed administrator. Still, very large districts are likely to need full-time district coordinators for both the library media and instructional technology components of the information and technology program. That being the case, collaboration and cooperative planning are essential for an information and technology program to effectively meet the district's curricular needs and serve all students and teachers.

Technical Support Staffing Guidelines

Adequate technical support is a huge need for today's schools. As computers and other technologies are installed, the district as well as individual schools need personnel to maintain networks and other hardware and to help solve problems users encounter with computers and software programs. The number of required technical support staff depends on several variables, including the number of workstations, the physical layout, the variety of operating systems and software applications, and the amount of technical support outsourced. According to a study by the Consortium for School Networking, "In the business environment, a full-time computer support person is generally required for every 50-75 computer users" (1999, 14). Few school districts have the resources to provide this level of support. However, as the number of computers in schools increases, districts must establish some workable and realistic level of technical support.

Most computers and other technologies in schools today are interconnected or networked. Thus, nearly all equipment, with the possible exception of a few specialized systems, need to be maintained using in-house technical support. This is especially critical as technology becomes more and more seamlessly integrated into the curriculum and classroom instruction. Past experience has shown that when technology is not dependable, educators will not incorporate it into classroom instruction. Except for the very smallest school districts, every school district should have

- One network manager per district (large districts will need additional district-level network and technical support staff).
- One technical support person for every 250 computers or the equivalent of one half-time technician per school.

School-Level Staffing Guidelines

Every school, regardless of size, should maintain a library media program staffed by a certified library media specialist. PI 8.01(2)(h), the administrative rule for Wis. Stat. 121.02(1)(h), states, "All students in grades 7-12 shall be provided with library media services performed by department-certificated library and audiovisual personnel" (see Appendix D).

Though not mandated by statute, the Department of Public Instruction recommends the same professional staffing for elementary schools, because Wisconsin's academic standards require information and technology competencies for students in the elementary grades—competencies that provide a foundation for successful student learning at the secondary level. Depending on enrollment and the level or range of services to students and staff, larger schools (650+ students) should employ additional library media specialists or instructional technology professionals. In addition, professional information and technology personnel must have sufficient clerical and technical support staff to manage the organization and circulation of library media and instructional resources and oversee the day-to-day operation of the library media center, computer labs, and other independent-learning spaces for students throughout the school building.

Over the years, library media specialists have incorporated technologies of all kinds (for example, video recording/distribution, library automation systems, instructional television, computers, and distance learning) into their programs. More recently, increasingly complex, and diverse technologies (and networking) have caused some Wisconsin school districts to move toward differentiated staffing in order to plan, implement, and manage new technologies to improve instruction. They have created new professional positions to extend and complement the traditional library media specialist role.

Most of these new positions focus on teachers' staff development needs as they struggle to integrate new technologies and computer applications into teaching and learning. Some respond to the need to incorporate information and technology literacy competencies into preK-12 curriculums. These new full or part-time professional positions have many different names and titles (for example, technology integration specialist, computer resource teacher, technology training specialist, and technology mentor).

While some districts have created new positions, others have expanded their current library media program and staff to encompass instructional technology. Whatever route is taken, additional staffing has become necessary to effectively integrate information and technology literacy competencies into curriculum and classroom instruction. The chart on the next page summarizes guidelines or recommendations for information and technology staffing at the school or building level.

School Information and Technology Staffing Guidelines

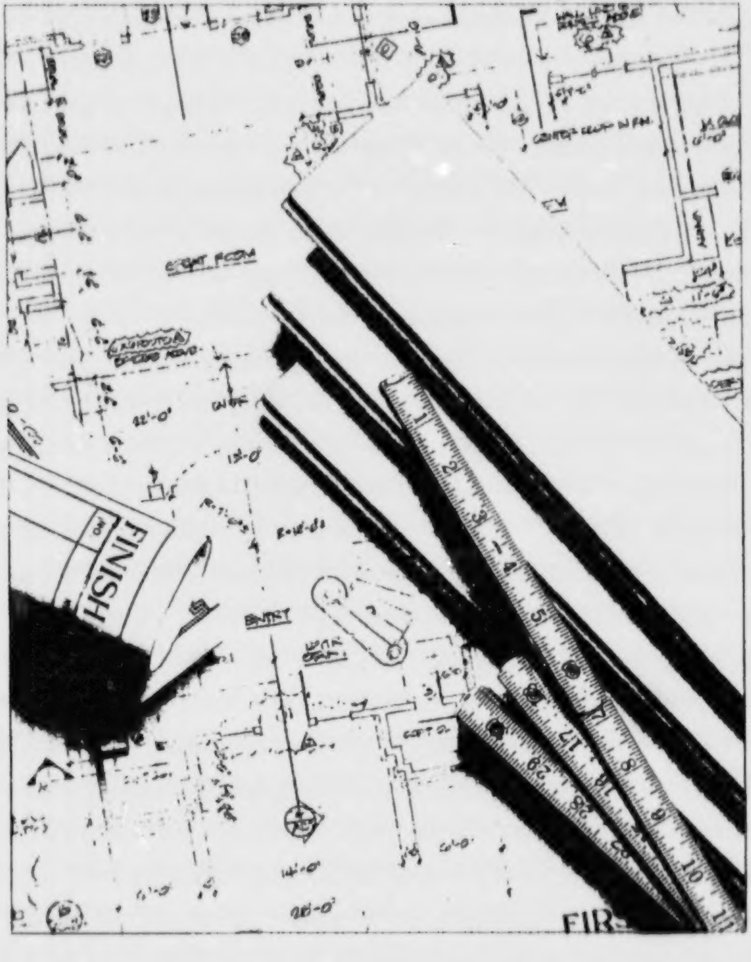
(full-time equivalent positions)

Enrollment	Professional Staff [1]	Support Staff [2]	Technical Staff [3]	Total Staff
Up to 299	0.5-1.0	1.0-1.5	0.5	2.0-3.0
300-799	1.0-2.0	2.0-3.0	0.5	3.5-5.5
800-1,399	2.0-2.5	3.0-3.5	0.5-1.0	5.5-7.0
1,400-2,100	2.5-3.0	4.0-4.5	1.0-2.0	7.5-9.5

[1] Library media and instructional technology professional (teacher-certified) staff—library media specialists and/or technology integrators, computer resource teachers, technology training specialists, and so forth. To provide basic information and technology needs, a certified library media specialist is essential in every school. In order to provide students and staff with a complete range of library media and instructional technology services, additional professional library media or instructional technology staff will be necessary.

[2] Library media center clerical/aide staff and computer lab/learning center assistants

[3] Technical support staff or computer technicians (not including the network manager and other district-level technical support positions)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Facilities and Facilities Planning

6

Instead of building schools for 1950, let us build schools for 2050. We need schools that are healthy, energy smart, environmentally sensitive, using up-to-date technology—that complement and enhance academic excellence; schools designed by the community and with the students and the community in mind.

– Richard W. Riley, U.S. Secretary of Education

America's schools are aging. The National Center for Education Statistics recently reported that the average public school building in the United States was 42 years old (1999, 1). Planning new and retrofitting old facilities is a critical task for educational leaders, keeping in mind that districts may have to use these facilities for 40-50 years. Facilities should be flexible and open-ended to allow for change and growth; attentive to the needs of students, staff, and instructional program; and affordable in the short term. It is never too early to begin gathering data and ideas for new facilities and to visit successful programs incorporating innovative designs. Because of the diversity and complexity of the school curriculum and instructional programs, a systematic and districtwide process is essential to design effective and successful educational facilities.

Facilities Planning

The district information and technology team that develops the district's comprehensive educational technology plan plays a vital role in facilities planning and design. The technology plan structures the orderly, cost-effective, and educationally valid use of information and technology in the educational setting.

As always, well-defined instructional program goals must come first. A technology-oriented plan may look good in the local newspaper but may not necessarily result in an effective instructional program or in improved student learning. The district technology plan examines classroom needs for information access and technology utilization to meet instructional objectives. It must also examine information and technology use in such specialty areas as the library media center, guidance suite, science labs, and other program spaces. Successful technology planning ensures that each step toward technology use supports instructional goals and objectives. Only when instructional goals are clear, standards-based, and well defined and when information and technology solutions are selected to support those goals can one design and implement a learning environment that successfully improves student achievement.

Among key questions the district information and technology team must address in the comprehensive educational technology plan are the following:

- How and where will students interact with information and technology?
- How will various learning spaces be configured for information and technology use?
- How can flexibility and versatility be built into classroom learning spaces?
- How will teachers access/employ information and technology resources?
- What type of networking system(s) will we implement?
- How are wireless technologies incorporated into the facility?
- Should an electronic centralized media-retrieval or video-on-demand network be installed?
- How will the library media center's online catalog be accessible on the school network?

- How will we make informational and instructional resources available to the community/homes?
- Will the new school use textbooks? If yes, will they be print or e-texts?
- Will the school provide every student with a laptop computer or other portable device?
- Will the facility incorporate computer labs?
- If the school will have computer labs, what kind, how many, and for what purposes?
- What areas will be available for students to work independently or in small groups using technology?
- What virtual or distance-learning opportunities will the district provide staff/students?

The answers to these questions will become a key component in the design of new and remodeled facilities.

Facilities Planning Process

When planning a new school, most districts begin the process by creating a building planning committee. Because of the importance of information and technology systems in today's facilities, some members of the district information and technology team should be included on the planning committee. Professional staff who will be assigned to the new or remodeled facility should also be included as early as possible. Some districts hire or appoint the principal and/or library media and instructional technology professionals a year before construction begins to ensure the facility will meet its educational objectives.

Educational facilities planning, design, and construction can be broken down into nine phases or stages.

- Educational specifications
- Schematic design
- Design development
- Construction document
- Specifications and bidding
- Construction
- Change orders
- Acceptance of the facility
- Postconstruction evaluation

Educational Specifications

The purpose of developing educational specifications is to define and detail the educational *program* to be delivered in the new (or remodeled) facility. Educators create the specifications to guide the architectural firm and others involved with designing the facility and selecting technology systems and solutions. *What Works: Research About Teaching and Learning Through the School's Library Resource Center*, cited studies showing that educational specifications are more important to effective facilities than finances (Haycock 1992, 59).

The educational specifications document begins with a thorough, in-depth explanation of curriculum goals and instructional activities that occur within the learning environment. It then details the information and technology requirements for delivering the program. It also identifies and defines the functional, spatial, and environmental requirements of the facility and specific areas within the facility (NSBA 1998).

A properly prepared educational specifications document includes:

Mission statement: a vision for the building as a whole and for each instructional program.

Program goals: clearly defines the educational goals of each instructional program, including learning objectives and the psychological and emotional needs of students, if appropriate.

Program activities: well-defined program activities determine functional and spatial needs and result in the design of a successful learning environment.

Student population: the projected enrollment of the entire building and the maximum student capacity needed for each learning space or area are essential to defining spatial requirements.

Instructional technology: new applications of instructional technology planned for the near and distant future, described for each program, and referenced to building and districtwide plans. It is important to project future voice/video/data communications needs of classrooms and library media centers. When designing a digital network, it is advisable to plan for expansion; not only will traffic increase as applications demand more bandwidth, but entirely new digital technologies may be on the horizon. As an example, the Wisconsin Educational Communications Board is currently testing datacasting interactive video and computer applications via digital television. In the near future, it will be possible to operate a video distribution network over a data network if one plans ahead.

Functional relationships: each program space or area is described in terms of its functional relationship to other program spaces and areas; functional relationships must also be defined and clarified among departments.

General conditions: in addition to instructional program requirements, certain other internal building or program environmental requirements need to be detailed, such as heating and air conditioning, windows, water requirements, lighting, acoustics, security, and parking.

Schematic Design

After the architect is hired, an initial sketch phase begins based on the program described in the educational specifications, how the building will fit on its site, and needed spaces or areas and their relationship to one another. Drawings at this stage are little more than circles on notebook paper indicating the various program areas and spaces. At this point, the architect is gathering data to determine the size and scope of the facility and project. This is an appropriate time to identify and visit new, innovative facilities, particularly if they incorporate features the district is considering.

Design Development

In the design development phase, the building and various program areas, classroom spaces, and support areas begin to take shape. Conceptual spaces and areas now become actual rooms, learning centers, and offices. The architect calculates square footage for various areas based on program needs and the budget. The size and shape of the various spaces and areas are being determined and drawn to scale. The client is asked to identify desired furnishings and built-in

A Facilities Planning Case Study: Board, Staff, and Community Involvement

"In planning for the future, and particularly in developing new educational specifications, we've found the greatest need is to prepare the staff to break through the paradigms under which we work and live. Our district used a futures symposium to precede the development of a new instructional delivery system and the preparation of educational specifications for new schools and remodeling projects.

"The futures symposium featured leading educational futurists who spoke on three topics: practical application of technology in the classroom and other areas of school buildings; the environment in which learning and technology takes place; and the human element that demands that we provide interaction among students, between teachers and students, and among other persons within schools. Small groups of teachers, administrators, parents, and representatives of architectural firms discussed the topics and questioned the speakers. The groups then listed questions, suggestions, and comments on how they felt the district should develop the new instructional delivery system and prepare new educational specifications.

"Our discussions have pointed out the need for teachers to observe the many new teaching techniques and technology currently operating in the district. A New Teaching Practices/Technology Fair will feature district teachers demonstrating their new teaching techniques that utilize technology. The district will apply an hour of early-dismissal time and paid after-school time to allow teachers to attend the fair. We hope that the fair will make new ideas seem less formidable, as reluctant teachers see their colleagues using new media."

— Eugene R. Hertzke, Central Kitsap School District No. 401, Silverdale, WA Superintendent (NSBA 1998) equipment, and they are incorporated into floor plan drawings. At the conclusion of the design development stage, the architect will present fairly detailed drawings for approval.

Construction Document

In the construction document phase, the architectural drawings (blueprints) cease to be artistic renderings and become formal, legal documents. Since these documents will be used to secure contractors' bids and guide facility construction, the information in them must be accurate and precise. Errors in the drawings could lead to expensive mistakes and potential lawsuits. During this phase, the district should take care to ensure that quantities of items (computer stations, tables, chairs, and so forth) are accurate. Decisions on finishes, colors, carpeting, and the like are often determined during this phase.

Specifications and Bidding

At the beginning of the construction document phase, the district will be expected to develop specifications for furnishings and equipment that will be an integral part of the new or remodeled facility. Specifications must be accurate in order to ensure that vendors' furnishings and equipment bids reflect what is required to support the educational program. Specifications that are too sketchy or inaccurate could allow a vendor to bid lesser quality furnishings or equipment that may not meet program needs.

Relative to the library media center, the district will need to develop specifications for an opening-day collection (and vendor), including how the new materials will be cataloged. Most successful referendums (bond issues) provide funding for an opening-day collection. Without that additional funding, students and teachers would be denied access to an adequate materials collection and other electronic resources for several years. In addition, the district will need to develop specifications for a library automation system, distance-learning solutions, networked reference services, possible media-retrieval or video-on-demand systems, multimedia-production services, and a security system.

Construction Phase

At the onset of the construction phase, the architect ensures that the contractor understands the construction document (blueprints). Many building projects employ a general contractor and a number of subcontractors (plumbing, heating, electrical, and so forth). In successful projects, architects, contractors, and educators work together to ensure items haven't been overlooked and to resolve problems that could be costly to correct after the facility is completed. Regularly scheduled meetings should be held *before and during* construction to resolve questions, address concerns, and finalize project timelines.

Change Orders

Change orders happen during or just following the construction phase. A change order results from an inspection that discovers some part of the new facility that will be a problem or simply will not work as planned, even though the school district approved the construction documents. Change orders are costly, unless the problem was the result of a contractor error in interpreting the construction document. However, it is far better to make changes at this point than to wait until staff and students occupy the facility.

Acceptance of the Facility

At some point in time, the architects, contractors, school administrators, and board members must conduct a final building inspection. After all problems identified in the inspection are corrected, the board of education formally accepts the new facility. When it does so, the school district accepts responsibility for any future problems (unless covered by warranties) or change orders.

Post-Construction Evaluation

During the first year or two of operation, the school district should evaluate the new facility to ascertain how well it meets instructional program and technology objectives. The district should document strengths and weaknesses so improvements can be made in future facilities.

Library Media Center Guidelines

One facility that all schools need is a library media center (LMC). A well-designed library media center is conveniently located and provides information and technology services that support the curriculum and facilitate student learning. The LMC includes five core areas and two additional vital learning spaces that may be a part of, adjacent to, or separate from the center. All areas should be fully networked (including Internet access) and contain a sufficient number of computer workstations. Laptop computers and wireless networking should be incorporated into the design to provide maximum student/staff access and flexibility. The five core areas are:

Study and research/reference area: space for all information desks, online computer stations, study and research tables/workstations, reference materials, professional library materials, and reference and nonfiction stacks/shelving.

Reading area: space/shelving for books and periodicals that encourage literacy, lifelong learning, and recreational reading; it should include a story area for elementary schools and a browsing and independent reading area at all levels.

Instructional area: space for formal seating for small and large group instruction, including appropriate presentation technologies and display space.

Production and group project area: space for functional work (projects) and meetings for individuals, teams, and small groups as well as facilities for media production.

Administrative area: space for circulation activities, office functions, collaborative planning, processing of information and instructional materials, communications distribution "head end," audiovisual equipment storage, and supplies and materials storage.

Two additional learning areas are:

Distance-education area: a soundproof room(s) for two-way interactive telecommunications to provide additional learning opportunities and course offerings for students and professional development for teachers. (Note: While this area is appropriate as part of the library media center, it could be located elsewhere in the school. Additional supervisory staffing may be necessary, as library media specialists should not be expected to supervise distance-education courses for students.)

Computer laboratory: a glassed-in or segregated computer laboratory for collaborative LMC/content-area lessons and technology-infused units/projects for curricular areas that do not have separate or designated computer labs.

The school library media center requires approximately 8-9 square feet per student. If the school plans on adding classrooms in the future, the size of core facilities (gymnasium, library media center, cafeteria, and the like) should take into consideration future enrollment increases. If the LMC will contain a distance-learning area and computer lab, then the higher end of the range should be used in determining space allocation.

The formula used to determine the size of the school library media center should provide sufficient space for schools with enrollments of 450-1,500 students. Smaller or larger schools may need to adjust the suggested size range. Schools with less than 450 students should consider the higher end of the range or exceed it (9-10 sq. ft./student); schools with more than 1,500 students will probably find that 7-8 sq. ft./student is sufficient.

Resources and Tools for Learning

7

This "telephone" has too many shortcomings to be seriously considered as a means of communication. The device is inherently of no value to us.

— Western Union internal memo 1876

The variety of information resources and learning tools available to access information in our world continues to grow and change at a rapid rate. Time, space, location, and ownership constraints are disappearing as resources and technological tools become universally available.

Universal availability requires significant changes in the way schools make information resources available to students as well as the tools and processes students use to access them. Traditional collections of "preselected" resources are giving way to wider access that requires evaluating and identifying appropriateness on the part of all users. Regional and state agency contracts are providing resources at no or dramatically reduced cost to schools. Other online information resources are available only through paid subscription contracts. Computer equipment and other learning tools previously available only in specific areas of the school are now common and networked into most classrooms, school library media centers, public libraries, and indeed many households. Students of all ages use these tools regularly. In this changing context, the school information and technology program's responsibility to provide the necessary resources and tools for learning takes on a new dimension.

This new dimension expands the range of resources beyond the centralized library media center collection. Students and teachers should have access to resources throughout the school and from multiple remote locations. Electronic networking makes text resources available in a variety of formats, including online, and students are acquiring access to school-based resources from home. This scenario assumes that the technology necessary to access, use, produce, and present information is readily available to all students; easy to use; and appropriate for different ages and abilities. It also requires that selecting, organizing, and using information resources and technological tools is carried out collaboratively by a wide variety of individuals and teams at the building and district levels to meet the needs and interests of all groups.

Teachers need to play a far greater role in selecting and managing information resources and learning tools, and parents need to accept responsibility for helping their children use information and technology wisely and safely. Media specialists and technology staff at all levels must establish and follow policies and procedures that ensure equitable, appropriate access to and use of information and equipment. District personnel must be involved in regional and state decisions regarding resource contracts and state funding opportunities. All members of collaborative information and technology teams should recognize that as students benefit from remote resources, local school and district information resources become part of the larger information environment and need to be shared with others outside school and district boundaries.

In addition, students themselves must take on new responsibilities for selecting and accessing information needed for their own learning. For students to be successful in the new information environment, they must acquire the skills to identify an information need; develop information-seeking strategies; locate, access, evaluate, and use information; organize information; and evaluate the effectiveness of the process and the product. *Wisconsin's Model Academic Standards for Information and Technology Literacy* (WDPI 1998) clearly identify these skills.

Access

The information resources and learning tools necessary to function effectively in society come in a variety of formats that provide access to reliable, authoritative, and accurate information. This document defines information (and instructional) resources as print, nonprint, and electronic media found in school library media centers, learning centers, classrooms, and online remote sources. Learning tools include the equipment and technology needed for accessing, using, producing, and presenting information as well as the processes and skills needed to use media and equipment effectively for student achievement. New technologies can vastly expand information resources and learning tools students and teachers use, allowing greater focus on individual learning needs and styles. Resources must be available and accessible to support curriculum, individual learning, recreational pursuits, and teachers' professional development.

Appendix K contains specific information resources and learning or technology tools necessary for achieving the competencies identified in *Wisconsin's Model Academic Standards for Information and Technology Literacy*. The resources and tools are divided into grades 4, 8, and 12, allowing districts and schools to identify the items needed for teaching the standards at each level. Information and technology teams should identify what their school or district currently owns (or has access to), then develop a plan and proposed budget to acquire the information resources and learning tools not available to students and staff.

Identifying and selecting resources should be based on students' educational needs, the local school and district curriculum, and state and national standards. Districts must provide access to a wide variety of information resources and technology tools to meet the diverse needs of the entire learning community. They need to make a special effort to ensure that they meet the needs of all learners in the school, including those with physical, mental, emotional, and/or learning disabilities; those with special talents; and those from different backgrounds or socioeconomic groups within society. It may also require providing access to specialized resources for students with unique learning needs beyond the curriculum, location, or calendar of the school.

Providing access to information resources and technology tools for individualized learning will extend collaboration beyond the school as information and technology teams work with district, regional, state, and national counterparts to contract for or create a variety of sources and delivery mechanisms, such as online or distance-education offerings. These sources support individual or special learning needs, state and national standards, and common curricular objectives. This process requires school districts to commit time and finances to support developing resources that reinforce the school curriculum and local goals for student achievement.

In order to be accessible to students, information resources must be organized in a universally accepted manner and be readily available when needed. Electronic cataloging and online web-based catalogs and indexes are essential for efficient access and retrieval of information in many formats. Using web pages as a guide to appropriate research resources is becoming a standard for course assignments and topical access. Both onsite and off-site resources need to be included in such listings, and the format should ensure sufficient access points to offer students the widest possible information resource options.

Districts and schools must make technology tools readily available and provide students with appropriate instruction and assistance to use the tools effectively and efficiently. Students must have opportunities for accessing and sharing information from the Internet, using equipment such as video and digital cameras, and developing presentations using visual and electronic means. Policies related to using various technologies should be as flexible and open as possible and provide equitable access to all students.

Selection

Selecting information resources and learning tools begins with establishing a districtwide materials selection policy. Wisconsin administrative rule PI 9.03(1)(e) for Wis. Stat. 118 (see Appendix D) requires school districts to have a board-approved materials selection policy. The purpose is to ensure current and balanced library collections that accurately reflect the cultural diversity and pluralistic nature of the American society without bias.

The selection policy must take into account all resources that support student learning, including textbooks and software. It should be based on intellectual freedom principles and be developed by teachers, administrators, and community representatives as well as the district's library media specialists and instructional technology staff. It should include procedures for selecting new materials and handling challenged materials. Studies clearly indicate that schools with a written policy on selecting and reconsidering library media materials are more successful in retaining questioned materials (Haycock 1992, 45). The policy also should stipulate that donated materials are considered on the same basis as purchased materials. Selection policies should require copyright compliance by all members of the learning community. The Office for Intellectual Freedom of the American Library Association provides an excellent selection policy guide for school districts on its website: www.ala.org/alaorg/oif/workbook.pdf.

Selection criteria for classroom instructional materials (generally defined as those used by all students in a classroom) will differ from selection criteria for resources available to students individually through the library media center. As classroom instruction moves toward more problem-based instruction, the boundaries between classroom instructional materials and library resources become less clear. However, the selection policy should still differentiate between these two kinds of resources. It is critical that identifying and selecting resources for library media centers and individual use serve the broad spectrum of student needs and interests and not be limited by their appropriateness for all students or classroom instruction.

Selecting instructional and informational resources is a collaborative process. Districts need to include building-level teachers, library media specialists, and instructional technology staff in decisions regarding districtwide contracts for information resources, computer software adoptions and licenses, webpage policies, and other technology-related selections. At the school level, teachers and professional library media and instructional technology staff should work together to determine the resources needed to support the curriculum and meet the needs of students for independent study and personal pursuits. While individual staff members may have responsibility for coordinating and recommending the selection and purchase of resources and equipment in their area of expertise, all educators in the school community must be involved.

New technological developments may change both the selection process and some of the formats for information resources. Library media professionals, in concert with other instructional personnel, will have to examine and acquire materials in a variety of new formats in order to meet student and staff information needs.

Internet Policies

Each local school board must develop and approve an acceptable-use policy (AUP) covering student and staff use of self-selected off-site resources. This may be a separate policy or may be part of the materials selection policy. Acceptable-use polices will vary based on available technology, local needs, and applicable laws. Three websites may prove helpful to districts developing an AUP:

- National Education Association:
  www.nea.org/cet/BRIEFS/brief12.html
- Virginia Department of Education:
  www.pen.k12.va.us/go/VDOE/Technology/AUP/home.shtml
- The Center for Responsible Use of Information Technologies, University of Oregon:
  www.ces.uoregon.edu/ces/responsibleuse

Any acceptable-use policy must incorporate an internet safety policy. The Children's Internet Protection Act (CIPA) requires any school or school district that receives discounted rates for Internet access, or internal connections under the federal

E-Rate program to comply with CIPA. Compliance is also a requirement for schools or libraries using funds from certain Federal programs (for example, EETT, LSTA, and the like) to improve or advance Internet access. The CIPA statute requires schools to both install and use filtering and blocking technology and to implement a comprehensive internet safety policy that addresses the following:

- access by minors to inappropriate material on the Internet and World Wide Web
- the safety and security of minors when using electronic mail, chat rooms, and other forms of direct electronic communications
- unauthorized access, including so-called "hacking" and other unlawful activities by minors online
- unauthorized disclosure, use, and dissemination of personal identification information regarding minors
- measures designed to restrict minors' access to materials harmful to minors
- a plan to monitor minors' use of the Internet in school

The filtering requirement also mandates installing and using filtering software or services on all school computers with access to the Internet. When minors are using the Internet, access to visual depictions must be blocked or filtered if they are obscene, contain child pornography, or are harmful to minors. When adults are using the Internet, only visual depictions of obscene material and child pornography must be filtered or blocked. Schools may not disable computer filters when minors are using them, *even with parental or teacher permission and supervision*. Appropriate school staff may disable filters for adults using school computers for "bona fide research purposes."

The application of this law for public libraries is being challenged in court; it may be challenged for schools in the future. However, the U.S. Department of Education and the Wisconsin Department of Public Instruction (DPI) have indicated that they expect grantees to comply with CIPA. The Wisconsin DPI website contains updated information on CIPA requirements at www.dpi.state.wi.us/dpi/dlcl/pld/cipafaq.html.

Maintaining a Collection

In order to fulfill the vision of the Wisconsin Model Academic Standards and improve student achievement, districts need to provide adequate funding for information resources and learning tools. An adequate budget not only sustains existing programs but also supports the inclusion of new information and technology services necessary to address the changing needs of the school community. Although the cost of purchasing instructional materials continues to escalate, new technologies are providing schools with greater access to information than ever before. In the foreseeable future, schools will need to continue providing books and other printed resources in-house, but more and more information and resources will be available electronically, especially from the Internet and other online providers. Information and technology teams need to be aware of this changing landscape as resource sharing and consortia agreements, statewide contracting (for example, BadgerLink and MarcoPolo), Internet services, web-based resources, and distance-learning programming become major sources of instructional resources for schools.

Specific to the library media center and its collections, a base level of support is necessary at all schools, regardless of size, to maintain a balanced, current, age-appropriate, and curricular-relevant collection for meeting the instructional and recreational reading needs of students. Educational research has consistently shown that students who read more are more successful academically (Lance, Rodney, and Hamilton-Pennell 2000, 21-22). Each year, school districts in Wisconsin receive Common School Fund allocations to purchase library materials. While per-pupil amounts vary slightly each year, all funds must be used to purchase school library materials (see Appendix L). Common School Fund dollars should be viewed as a supplement to locally budgeted dollars for library media resources. The long-range plan for library media services should detail and prioritize any needs for additional information resources from local budgets.

Districts must continually evaluate, maintain, and upgrade information resources as necessary. The financial as well as educational value of a resource collection diminishes when it includes items that are unusable because of inaccurate or outdated content, inappropriateness for the age group being served, or physical deterioration. Inventory and weeding remain important procedures in keeping a collection current, accurate, and relevant to the curriculum.

The district's 3-5 year comprehensive educational technology plan, developed by the district information and technology team, should establish the annual budget for technology and other learning tools. The technology plan should aim to provide a "critical mass" of equipment and networking that will support the school district's curricular and instructional goals. The technology plan not only needs to detail future instructional equipment purchases but also the technical support necessary to support the technology. It should also detail the plan for future software upgrades, hardware replacement, new and remodeled facilities, and staff development.

It is important to note that both school district required plans (library media services and educational technology plans) should be developed in conjuction with one another. In fact, districts do have the option of developing a single plan providing it contains all items required for approval in the guidelines for each plan.

The costs of providing an ever-increasing range of information resources and learning tools are significant. School districts need to identify and evaluate the use of regional services, cooperative or consortium arrangements, purchased-service contracts, joint projects with other agencies or districts, and grant opportunities as potential ways to obtain specific instructional resources or technology services.

Staff Development and Professional Growth

8

Our task is to lead others. But, we can't lead where we won't go. For us to be successful as educators, we must create time to engage in, model, and make visible to the school community our own learning.

— Barth 1997

The need for inservice training and other forms of professional development and growth has become a critical component of nearly every modern educational reform or improvement effort. A study by Guskey and Huberman (1995, 1) noted,

> Educational researchers are constantly discovering new knowledge about teaching and learning processes. As this professional knowledge base expands, new types of expertise are required of educators at all levels. Moreover, like practitioners in other professional fields, educators must keep abreast of this emerging knowledge base and be prepared to use it to continually refine their conceptual and craft skills.

The call to bolster professional development and growth among educators began with *A Nation at Risk* (1983) and has carried through in more recent studies, including *Teachers Taking Charge of Their Learning: Transforming Professional Development for Student Success* (National Foundation for the Improvement of Education 1996) and the revised *National Standards for Staff Development* (National Staff Development Council 2001). These reports note the need for stronger professional development for all educators, not just for classroom teachers.

Professional development to support student achievement in a standards-based curriculum needs to be built upon the principles of adult learning. Many professional education groups have translated research into effective staff development principles of practice. The National Foundation for the Improvement of Education (2000, 102) reported that the most effective staff development

- focuses on student learning;
- is rigorous and sustained over time;
- is designed and directed by teachers themselves based on student and teacher needs;
- fosters the spirit of collaboration and critical reflection;
- involves authentic tasks;
- is curriculum focused and job embedded; and
- builds a collegial professional culture.

A comprehensive and ongoing program of professional development for all educational staff is essential to successfully integrate information and technology literacy skills, resources, and learning tools into curriculum and classroom instruction.

Professional development in information and technology literacy integration can be accomplished in many different ways, some of which might be implemented and operated simultaneously. For instance, some districts might be using a more traditional approach by conducting or contracting for inservice or workshop sessions for their educational staff. Other districts might provide monetary compensation or school district credits for taking academic courses, attending workshops, or participating in information and technology conferences. Yet another district might elect to hire technology-integration specialists or computer resource teachers to work with classroom teachers in designing, developing, and delivering technology-infused units and lessons. Still others might expand their library media staffing to work more closely with teachers as resource specialists and instructional designers in developing and delivering lessons that incorporate information and technology competencies.

As one looks to new professional development opportunities, information and technology leaders need to investigate and consider the wealth of innovative resources and interactive delivery mechanisms currently available to extend learning and collaboration beyond the school in conjunction with district, regional, state, and national counterparts. Distance-learning technologies, web-based courses, collaborative networking environments, and video-based resources make anytime, anyplace professional development a reality. Members of teaching and learning teams also can benefit from training and participation in study groups, action-research teams, and peer-coaching activities.

Staff development programs need to consider the changing landscape of teacher certification as well. In December 1999, the Wisconsin Department of Public Instruction adopted and the Wisconsin legislature approved new rules for licensing teachers (PI 34.02). The new license-renewal program shifts the focus from a system of higher education credit hours or equivalents (six credits every five years) to a professional development model based on demonstrating growth and proficiency in 10 core teaching standards. The new process calls for peer review, monitoring, and approval of individual professional development plans. It is important to note that two new teacher standards require all educators demonstrate proficiency in using technology for classroom instruction (see sidebar).

The Wisconsin DPI has also adopted seven additional administrator standards (PI 34.03). School administrators must demonstrate proficiency in both the seven administrator standards and the 10 teacher standards. The DPI has also approved seven new standards for pupil services administrators (PI 34.04). The new rules for teacher and administrator licensure take effect on July 1, 2004.

In addition to Wisconsin's new standards for teacher and administrator certification, the International Society for Technology in Education (ISTE) has published guidelines identifying and detailing technology standards for teachers. Though focusing mainly on technology, the *National Educational Technology Standards for Teachers* (2000) can help

PI 34.02 Teacher Standards. To receive a license to teach in Wisconsin, an applicant shall complete an approved program and demonstrate proficient performance in the knowledge, skills and dispositions under all of the following standards (emphasis added):

1. The teacher understands the central concepts, tools of inquiry, and structures of the disciplines he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for pupils.
2. The teacher understands how children with broad ranges of ability learn and provides instruction that supports their intellectual, social, and personal development.
3. The teacher understands how pupils differ in their approaches to learning and the barriers that impede learning and can adapt instruction to meet the diverse needs of pupils, including those with disabilities and exceptionalities.
4. The teacher understands and uses a variety of instructional strategies, **including the use of technology**, to encourage children's development of critical thinking, problem solving, and performance skills.
5. The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.
6. The teacher uses effective verbal and nonverbal communication techniques **as well as instructional media and technology** to foster active inquiry, collaboration, and supportive interaction in the classroom.
7. The teacher organizes and plans systematic instruction based upon knowledge of subject matter, pupils, the community, and curriculum goals.
8. The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of the pupil.
9. The teacher is a reflective practitioner who continually evaluates the effect of his or her choices and actions on pupils, parents, professionals in the learning community and others and who actively seeks out opportunities to grow professionally.
10. The teacher fosters relationships with school colleagues, parents, and agencies in the larger community to support pupil learning and well being and who acts with integrity, fairness and in an ethical manner.

generate ideas for professional development programs for teachers and other instructional staff. ISTE has also recently published *National Educational Technology Standards for School Administrators* (March 2002).

Several excellent publications on professional development with a library media focus also exist. One of the more recent, which includes suggestions for an information literacy-focused staff development program, is *The Information-Powered School* (2001), a joint publication of the Public Education Network and the American Association of School Librarians.

Role of the District Information and Technology Team

Developing an all-inclusive and ongoing information and technology staff development program begins with the district information and technology team. Their task is to develop a vision for information and technology use in the district as well as the comprehensive educational technology plan. As an integral part of the educational technology planning process, the library media staff (collaborating with teachers, administrators, parents, and students) should develop a long-range plan for library media services. Together these plans (or a combined plan) should clearly identify and recommend professional development programming necessary to successfully integrate information and technology literacy competencies into the curriculum and classroom instruction.

Before recommending any professional development program, the district should undertake a needs-assessment process to identify student and staff proficiency levels relative to information and technology skills. DPI-developed planning guidelines require a needs assessment as a part of the comprehensive educational technology plan (see Appendix M). The technology plan checklist requires documentation on the current status of the following:

- student and staff technology skills, knowledge, and attitudes
- curriculum and educational technology initiatives relative to educational improvement
- existing professional development activities and structures

To gather and document the data, many needs-assessment tools and strategies are available to the district team. Student data can be collected through informal surveys in elementary schools and via online or pencil-paper surveys in secondary schools. Student surveys should focus on information and technology skills as well as student access to information and technology resources both inside and outside the school setting. Focus groups working with selected students can provide additional information and identify standards or competencies needing greater attention in the curriculum. Analyzing student data can provide direction for curriculum revision and for professional development activities necessary to enable full implementation of the information and technology literacy standards.

Teachers and other educational staff need to assess their proficiency in using informational/instructional resources and technology tools, too. The first two content standards in *Wisconsin's Model Academic Standards for Information and Technology Literacy* can be used to provide the framework for a staff needs-assessment survey.

> **Standard A: Media and Technology**
> Students [and teachers] in Wisconsin will select and use media and technology to access, organize, create, and communicate information for solving problems and constructing new knowledge, products, and systems.
>
> **Standard B: Information and Inquiry**
> Students [and teachers] in Wisconsin will access, evaluate, and apply information efficiently and effectively from a variety of sources in print, nonprint, and electronic formats to meet personal and academic needs.

Teachers and other educational staff should become familiar with the concepts students are expected to master and strive to become proficient in the performance standards outlined in the information and technology literacy standards. Districts can create and administer self-assessment checklists to all educational staff to guide development of their professional development program and to provide opportunities for teachers to participate in valuable training as part of their professional development plans (as required by the new PI 34 rules for teacher and administrator licensing).

Other pre-established needs assessments are also available for district use. One self-assessment survey for teachers widely used in Wisconsin is the Level of Technology Implementation (LoTI) Survey, created by Dr. Christopher Moersch and the National Business Education Alliance (NBEA) of Corvallis, Oregon. LoTI is used to assess teacher comfort with personal computers and to identify the types of classroom instructional strategies they use. After teachers complete the LoTI Survey, districts may request summaries by school and/or district as well as individual teacher results. LoTI levels range from nonuse (LoTI Level 0) to refinement (LoTI Level 6). Appendix N provides a list and description of the LoTI levels of proficiency.

During the 1999-2000 school year, nearly 23,000 teachers in more than 300 of Wisconsin's 426 school districts completed the LoTI Assessment Survey (Moersch 2000). State results indicate that Wisconsin teachers are among the nation's best in terms of current instructional practices. However, the overall LoTI profile for technology integration revealed that Wisconsin teacher scores are similar to the overwhelming majority of teachers across the nation. This level, which Moersch calls "Level 2: Exploration," is one in which technology use is not yet fully integrated into the curriculum.

Another tool Wisconsin districts are starting to use is *enGauge*, a comprehensive, systems approach to district-level technology and information-resources planning, developed by the North Central Regional Educational Laboratory (NCREL) with assistance from several Midwestern states, including Wisconsin. The *enGauge* framework identifies six essential conditions (vision, practice, proficiency, equity, access, and systems) critical to effective use of technology for student learning (Lemke 2001). The *enGauge* website (www.ncrel.org/engauge/) contains online needs-assessment instruments for teachers, building and district administrators, technology coordinators, library media staff, school board members, parents, citizens, and students. Analyzing data from the survey instruments can be very useful in identifying district professional development and school improvement needs.

After districts have analyzed needs-assessment data, the information and technology team should recommend specific district-level professional development objectives and implementation strategies in the 3-5 year comprehensive educational technology plan. The plan should address the role that school library media and technology teams and grade-/subject-level teaching and learning teams have in information and technology staff development. The plan also needs to include a process for annual evaluation and updating of professional development objectives and programs.

Role of the School Library Media and Technology Team

The school library media and technology team should provide direction and guidance for building-level professional development activities with a goal of improved student performance and achievement. Among its more important tasks is to ensure the information and technology literacy standards are being integrated across the curriculum. These process skills are essential for students to function and thrive in the rapidly changing, knowledge-based society in which we live. Some teachers will need encouragement, guidance, and mentoring to incorporate information and technology process skills, digital resources, and technology tools into classroom instruction. Professional library media and instructional technology staff can play an important leadership and mentoring role by working with individual teachers or partnering with them on teaching and learning teams.

Tasks for the School Library Media and Technology Team—Some Examples

Some of the specific tasks that this team can perform are showcasing successful projects and units and getting the word out about great projects in individual schools and classrooms. They are the networking hub that links teachers in one curricular area to great things going on in other areas, grade levels, and school buildings. This team of instructional leaders helps establish the school climate by moving away from traditional workshops, developing teacher study groups, providing a global perspective, and fostering the philosophy of collaboration. They are the change agents of the school who need to be at the forefront of instructional improvement and advancements.

One resource that can help building staff with the integration task is the *Information and Technology Literacy Standards Matrix* (WDPI 2000). This publication provides guidance for library media specialists, instructional technology professionals, curriculum administrators, and teachers in aligning specific information and technology competencies with the standards in the four assessed content areas: English language arts, mathematics, science, and social studies. The CD-ROM version of the matrix publication also contains sample rubrics, checklists, planning worksheets, and activity ideas in addition to the full-text version of all five academic standards (that is, the information and technology literacy standards plus the four assessed standards).

Professional development opportunities to facilitate integrating information and technology into the curriculum require

- using learner-centered instructional strategies;
- building collaborative teaching and learning teams (versus teaching information and technology skills in isolation); and
- helping teachers analyze and evaluate information.

The school library media and technology team-developed staff development plan should also include opportunities for educational staff to reflect on and practice the performance objectives outlined in standards C and D of *Wisconsin's Model Academic Standards for Information and Technology Literacy*.

> **Standard C: Independent Learning**
> Students [and teachers] in Wisconsin will apply information and technology skills to issues of personal and academic interest by actively and independently seeking information; demonstrating critical and discriminating reading, listening, and viewing habits; and striving for personal excellence in learning and career pursuits.
>
> **Standard D: The Learning Community**
> Students [and teachers] in Wisconsin will demonstrate the ability to work collaboratively in teams or groups, use information and technology in a responsible manner, respect intellectual property rights, and recognize the importance of intellectual freedom and access to information in a democratic society.

Role of Teaching and Learning Teams

Collaboration among classroom teachers, library media specialists, and instructional technology staff provides an ongoing vehicle for professional growth for all team members. The sharing of best practices and resources, collaborative brainstorming and problem solving, and team-teaching opportunities provide reinforcement and collegial support for new ways of teaching and learning. As noted earlier, members of teaching and learning teams greatly benefit from participation in study groups, action-research teams, and peer-coaching activities.

Teaching and learning teams can greatly impact staff development by linking the role of the team to the new teacher certification model (PI 34). Beginning July 1, 2004, all new teachers or administrators seeking an initial Wisconsin license will be required to demonstrate proficiency in the teacher and/or administrator standards. Two of the 10 standards require teacher proficiency in the use of instructional media and technology in classroom instruction. Educators receiving their first license under the new rules will be required to create individual professional development plans that address one or more of the teacher standards. They will have five years to meet the goals in their plans, and license renewal will hinge on successfully completing the individual professional development plan goals.

Peer review will be a significant component of the new teacher license renewal process and approval of individual professional development plans. By working together initially to develop meaningful professional development plans, teaching and learning team members can help one another grow as effective educators. Teachers and other educators already licensed in Wisconsin on June 30, 2004, may continue with the traditional requirement of six credits of graduate work every five years or may choose to use the PI 34 professional development plan model for license recertification.

Members of the various collaborative teams should be encouraged to develop their own professional development plans and portfolios that can serve as models for other school professional staff. By advancing their own professional development, these team members will be instrumental in helping their peers and colleagues grow as effective teachers and administrators. Content Standard C of *Wisconsin's Model Academic Standards for Information and Technology Literacy* can serve as a focal point for individual professional development plans.

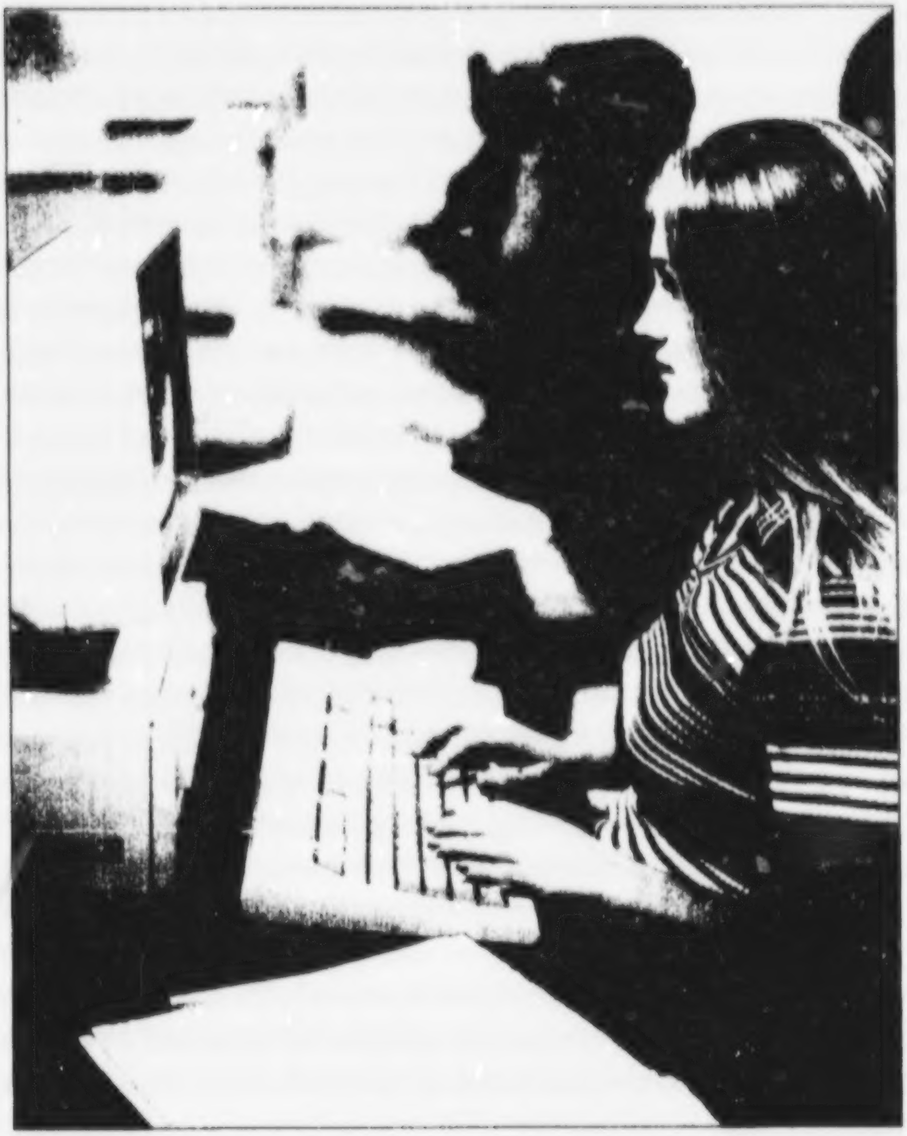
> **Standard C: Independent Learning**
> Students [and teachers] in Wisconsin will apply information and technology skills to issues of personal and academic interest by actively and independently seeking information; demonstrating critical and discriminating reading, listening, and viewing habits; and, by striving for personal excellence in learning and career pursuits.

Conclusion 9

We must become the change we want to see.
— Mahatma Gandhi

The vision of *Information and Technology Literacy: A Collaborative Planning Guide for Library Media and Technology* is that all school library media and instructional technology services be directed toward improving student learning and achievement. In this scenario, district- and school-level professional library media and instructional technology staff must plan, collaborate, and work together rather than compete for scarce resources. Competition among separate departments and programs is counterproductive to the goal of improved student learning. Separate programs can also lead to unnecessary duplication of services, resources, and learning (technology) tools. Therefore, to achieve maximum efficiency and effectiveness, this publication recommends that library media and instructional technology services be integrated into one program—a unified information and technology program.

Finally, to realize the goal of improved student achievement, building-level library media and instructional technology professionals must become dynamic, self-motivated change agents in their schools. They must play key leadership roles on district and school collaborative teams and curriculum committees, serve as consultants to building administrators, and plan and work as integral partners with classroom teachers on teaching and learning teams. This collaborative partnership will foster and facilitate proficiency in information and technology literacy skills as well as the content knowledge students need to become self-directed, lifelong learners.



Appendixes 10

A: Long Range Planning for School Library Media Programs

B: A Checklist for a School Library Media Program Plan

C: Collaborative Lesson / Unit Planning Template

D: Wisconsin Statutes and Administrative Rules for K-12 Library Media Centers and Educational Technology

E: Sample Student Research Process Checklist

F: Rubric for Assessing Notetaking

G: Balanced Assessment / Evaluation Framework

H: Sample Collaborative Curriculum Map

I: Sample Curriculum Alignment Worksheet

J: Chapter PI 34 – Administrative Rules for Licenses

K: Information Resources and Learning Tools

L: WESSAS Codes for Wisconsin's Common School Fund

M: Comprehensive Technology Plan Checklist

N: Levels of Technology Implementation (LoTI) Framework™

Long Range Planning for School Library Media Programs

The long range plan is a requirement of Standard (h), of the 20 Wisconsin Educational Standards.
http://www.dpi.state.wi.us/dpi/dltcl/eis/basicfacts.html

Good long range planning is hard work. However, it pays off eventually in better resources and services for students. There is further benefit in the fact that, as decision makers and community members come to know more about the library media program, they recognize how important the program is to the entire learning community and to students' personal growth and academic success. However, occasionally, the long range plans do not flow smoothly from vision through needs to actions. Sometimes recommendations rely on outside standards rather than on a clear relationship between the library media program's components and academic success. Unfortunately, most available models focus on "inputs" (staff, resources, and facilities) rather than on learning objectives.

It is also difficult and time consuming to do the research needed to show the link between good programs or practices and the academic success of students. While this is addressed in the literature of program evaluation, few tools and planning guides exist to make the job easier. The recommendations that follow are intended to help planners produce a concise but comprehensive plan with recommendations based on well-documented needs linked to student achievement.

Vision, Philosophy and Mission

It is important that all the components of a long range plan fit visibly into a well-organized document that starts with the district's educational vision, philosophy and mission and moves logically into the library media program's vision, philosophy and mission. Then the plan progresses to goals and activities that are derived from that mission. The vision may be expressed in a metaphor that describes a preferred image of the future. The vision does not refer to the status quo. The philosophy is a statement of underlying beliefs about what is important. It usually is very similar to the philosophy statement in the school district's strategic plan or school improvement plan. The mission statement suggests the reason for the program's existence, based on those beliefs. It defines the program's role in putting those beliefs into action.

Current Status

In order to improve services and programming the stakeholders are given an opportunity to review the components of an exemplary library media program which include integrated standards instruction, reading and literacy services, collection development and utilization, facilities accessibility and usage, technology leadership and support, staffing patterns and assistance, compliance with state and national standards, and how the Library Media program assists and enhances the overall instructional program.

Needs Assessment

Objectives and needs are closely related, since objectives can also be said to show how well the needs are being met as the plan is implemented. Needs can be thought of as barriers to accomplishing the objectives. A good library media plan will also include the opposite of needs—enablers, which are elements of the program that foster accomplishment of an objective, such as program strengths or best practices. Enablers and barriers can often be supported with statistics related to test scores, grades on unit projects, availability of the Library Media Center (LMC), use of the LMC, quantity of available resources, satisfaction with the level of service, etc. Surveys, questionnaires, and interviews help identify both barriers and program strengths. They also validate them by broadening the number of persons agreeing on them.

Goals and Objectives

Goals can be rather broad, but they should be focused as directly as possible on student learning outcomes in order to be perceived as valid by decision-makers. (For example: All students will be able to access, use, and evaluate information in any medium, and use that information to solve problems, communicate clearly, make informed decisions, and construct new knowledge.) Generally, goals should be few in number, since each of them can generate more than one objective; and each objective might generate more than one activity to accomplish it. Once the vision, philosophy, mission, and goals have been established, the planning team looks for ways to measure progress toward meeting the goals, so they identify needs, and they set objectives. Objectives or benchmarks will indicate if the goals are being accomplished. (For example: By the end of the school year, all eighth grade students will score at or above the proficient level in the "Information and Inquiry" content standard.)

Importance of Consensus

To be useful, goals and objectives have to be agreed upon and supported by a wide range of stakeholders: teachers, administrators, students, school board, parents and community members. This support is accomplished by having representatives from the various collaborative teams, such as the teams referred to in this document—the District Information and Technology Team, the School-Level Library Media and Technology Team, and the Teaching and Learning Teams—develop the objectives. While the scope of long range planning is the major responsibility of the District Information and Technology Team, the goals and objectives need to incorporate each building-level's goals and objectives. Building level input is critical because that is where implementation of the plan happens; where teaching and learning actually take place.

Action Plan

Recommended tasks necessary to reach objectives are usually listed after each objective. Later they are also listed in a table along with the timeline for completion, estimated costs, and the person or group responsible. Sometimes a brief rationale statement is also included. Any additional policies to be established or changed as well as potential problems would also be indicated.

Monitoring, Evaluating, and Revising the Plan

The planning process is cyclical. The planning committee needs to address a process for ongoing monitoring and evaluation. The road to improvement is continuous. The key to success is communication to all stakeholders and the establishment of realistic timelines.

Appendixes

Appendixes might include reports of program expenditures, a copy of the surveys used to gather observations, a list of library media program policies, and other related documents.

A Checklist for a School Library Media Program Plan

This is a suggested outline of what needs to be done to produce an accepted school board-approved school library media long-range plan.

Date of previous school board-approved plan: ____/____/____.

Date a plan revision is needed: ____/____/____.

Date to begin next planning cycle: ____/____/____.

Contact Person: ______________________

Library Media Planning Committee

☐ Contains equal representation of constituent groups across the K-12 spectrum (grade level, discipline, and position)

☐ Includes teachers, library media specialists, administrator, district curriculum coordinator, technology coordinator, school board representative, student, and parent or community member

Introduction

☐ Rationale for developing the long-range plan (for example, a quote from the state statutes)

☐ A brief history of the planning process

☐ Planning committee members' names and titles

☐ School and community demographics

☐ An overview of the planning process

☐ Community resources (for example, collaboration with the public library or public library system, local colleges, or universities)

☐ School district's vision, philosophy, and mission statement(s)

Library Media Program Vision

☐ Student-centered image of preferred future (for example, "All students will acquire 21st Century skills to become prepared to learn, work, and live in a digital, knowledge-based global society.")

☐ Staff-development image of a preferred future (for example, "All teachers will plan collaboratively with the library media specialist to implement and assess the information literacy standards in order to close the achievement gap.")

Library Media Program Philosophy

☐ Beliefs (for example, "Information and technology literacy skills are an integral part of the school's overall instructional process and are as important as reading, writing, and mathematics skills.")

☐ Concepts (for example, "The library media program values intellectual freedom, children's right to read, and open and equal access to information and technology.")

☐ Attitudes about learning (for example, "All students must have opportunities to become effective users and creators of ideas and information.")

Library Media Mission Statement

☐ Supports the school district's mission

☐ Relates to the local strategic plan, state initiatives, and federal regulations

☐ States the purpose (for example, to meet information and technology needs of students and teachers, support curriculum, guide the reading interests and research needs of students and staff)

☐ Discusses roles (for example, support academic achievement, collaborate on integrating the information and technology literacy standards, provide reading and learning incentives)

☐ Identifies the audience (for example, students, staff, administrators, and the community)

Current Status

☐ Assessment of student and staff information literacy skills, as well as attitudes and perceptions. concerning the library media center's services

☐ Description of Library Media Center (LMC) facilities

☐ LMC staffing

☐ Inventories:

____ LMC (print and nonprint)

____ technology equipment checked out through the LMC

____ computer hardware and software utilized by the LMC

☐ Scheduling description

☐ Reading-incentive programs

☐ Collaborative standards-integration units

☐ Professional development activities and structures

Needs Assessment

☐ Identify barriers to accomplishing the objectives

☐ Identify program strengths that enable or foster meeting the objectives

☐ Various data sources may include: grades on projects and portfolio assessments; standardized test scores; availability of LMC for students and staff; analysis of program records, including levels of collaboration, locally developed surveys, and interviews of stakeholders; and validated assessments (see Suggested Resources p. 51)

Succinct Instructional Design Goals

☐ Broad (or general) statements of purpose (for example, "Students will develop life-long learning skills." or "Students, teachers, and families will have open access to information technology in their classrooms, schools, communities, and homes.")

☐ Based on the mission statement, local strategic plan, *Wisconsin's Model Academic Standards for Information & Technology Literacy*, and/or the state superintendent's goals (for example, "An increase in collaboration with all teachers in order to integrate the information and technology literacy standards will lead to higher-order thinking skills and will close the achievement gap among all students.")

Instructional Design Objectives Leading to Higher Student Achievement

☐ Measurable statements that indicate how the goals will be accomplished (for example, "Teachers at all grade levels will collaboratively develop problem-based learning units incorporating the information and technology literacy standards.")

☐ Descriptions of how success will be measured (for example, "By the end of the school year, all eighth-grade students will score at or above the proficient level on a locally-developed assessment tool designed to measure the competencies identified in *Wisconsin's Model Academic Standards for Information & Technology Literacy*.")

☐ The conditions necessary to support accomplishment of the goals (for example, "All students will have physical and intellectual access to information and technology before, during, and after normal school hours.")

Action Plan

☐ Tasks that need to be done (for example, meeting with teachers to plan collaborative units, implementing and evaluating units, instituting flexible scheduling)

☐ Resources needed to respond to specific learning needs (for example, "The elementary school LMCs will add materials providing accurate and current information about various cultures.")

☐ Individual/group activities (for example, "Library media specialists will introduce the information and technology literacy standards to teachers during district staff inservices.")

☐ LMC hardware and software procurement, upgrades, and licensing issues

☐ LMC collection acquisitions and weeding

☐ Professional development opportunities for clerical, technical, and professional staff

☐ Timeframes and individuals/teams responsible

☐ Budget summary

☐ Funding sources

☐ Additional funding required to implement the recommendations

☐ Potential problems

☐ Policy changes needed to implement the recommendations

Monitoring, Evaluating, and Revising the Library Media Plan

☐ Process(es) for monitoring and evaluating

☐ Incorporating evaluation methods into the ongoing planning

☐ Process for reporting to stakeholders

☐ Timeline for ongoing long-range planning

Appendixes

☐ Statistical information (for example, test score data, analysis of the library media collection strengths and weaknesses, data on LMC usage, analysis of needs-assessment or user-satisfaction information)

☐ Sample needs-assessment instruments

☐ Policies, with brief descriptions of each: selection, challenges, weeding, copyright, resource sharing, general public's use of facilities and equipment, Acceptable Use Policy (AUP) with Children's Internet Protection Act (CIPA) requirements

☐ Wisconsin Statute Section 121.02: School District Standards, Adminsitrative Rule PI 8.01(2)(h)

☐ Wisconsin Statute Section 118.15: Pupil Nondiscrimination, Adminsitrative Rule PI 9.03(1)(e)

☐ Program expenditure reports

☐ Bibliography

Suggested Resources

American Association of School Librarians. *Access to Resources and Services in the School Library Media Program: An Interpretation of the Library Bill of Rights*. Chicago: AASL, 2000.
(Website: www.ala.org/aasl/positions/ps_billofrights.html)

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Zweizig, D. L., and D. M. Hopkins. *Lessons from Library Power Enriching Teaching and Learning: Final Report of the Evaluation of the National Library Power Initiative*. Englewood, CO: Libraries Unlimited, 1999.

■ Appendix C

Collaborative Lesson/Unit Planning Template

Teacher ______________________ Course Title ____________________ Grade _______

Unit ___________________________________ Today's Date ____________________

Beginning Date ____________________________ Due Date ______________________

Student Assignment: (briefly summarize)

Classroom Teacher's Role:

Library Media Specialist/Instructional Technology Professional's Role: (check all that apply

Introduce	Review	"How-To"	Guides	Assessment (rubrics, checklists etc.)
______	______	Online Catalog	______	______
______	______	Reference Books	______	______
______	______	Nonfiction Books	______	______
______	______	CD-ROMs	______	______
______	______	Internet	______	______
______	______	Internet-Based Reference Tools	______	______
______	______	Other Print or Electronic Resources	______	______
______	______	Graphic Organizer Software	______	______
______	______	Multimedia Software	______	______
______	______	Word Processing Software	______	______
______	______	Spreadsheet Software	______	______
______	______	Data Base Software	______	______
______	______	Multitasking	______	______
______	______	Loading/Importing Graphics/Sound	______	______
______	______	Other Software Programs	______	______

Assessment Tools: (circle all that apply)

Checklists Rubrics Conferencing Journals Portfolio

Describe how you accommodate the needs of different learners:

Time Management Calendar: (deadlines)

Evaluation: What changes need to be made? (complete after teaching the unit)

ITL Standards addressed:

Media and Technology	**Information and Inquiry**	**Independent Learning**	**Learning Community**
A.1	B.1	C.1	D.1
A.2	B.2	C.2	D.2
A.3	B.3	C.3	D.3
A.4	B.4	C.4	D.4
A.5	B.5		
A.6	B.6		
	B.7		
	B.8		

Content Standards addressed:

Wisconsin Statutes and Administrative Rules for K-12 Library Media Centers and Educational Technology

Sections of the Wisconsin Statutes (http://www.legis.state.wi.us/rsb/Statutes.html) cited below specify the mandatory standards to be applied to school library media and educational technology programs and services.

Library Media Services

Overview*

Standard (h), the library media standard, requires schools to make library services available to all students. This includes stocking libraries with materials, providing services that reflect the cultural diversity and pluralistic nature of American society, and having a long-range plan and professional library media staff at the building and district levels.

It has been estimated that instructional materials, including library media materials, educational software licenses, and textbooks, account for up to 90% of classroom teaching/learning experiences. These materials need to be up-to-date, accurate, and appealing to a variety of learning styles. The collection of materials also needs to include contributions from diverse cultures as well as presenting multiple perspectives and viewpoints without bias and stereotyping.

Professional library media specialists at the building and district levels should provide leadership for library media programs. A long-range plan, developed by a committee consisting of teachers, library media specialists, the technology coordinator, administrators, parents or other community members, and students, is essential for strategic planning of resource development from a qualitative as well as quantitative standpoint. Library media specialists work with teachers in the selection and weeding of library media resources including print, nonprint, and electronic. They also work collaboratively with teachers in planning, implementing, and assessing units of study that integrate the Wisconsin Information and Technology Literacy Standards into the academic content standards.

The Instructional Media and Technology Team under the Wisconsin Department of Public Instruction Division for Libraries, Technology and Community Learning provides assistance to school districts an all areas relating to library media services and instructional technology including long-range planning, policy development, and program evaluation.

Wisconsin Statute

Section 121.02 School district standards. (1) …[E]ach school board shall:

(h) Provide adequate instructional materials, texts, and library services which reflect the cultural diversity and pluralistic nature of American society.

Administrative Rule

The Department of Public Instruction administrative rule relating to this standard requires the following.

PI 8.01(2)(h) *Library media services.* Each school district board shall:

1. Have on file a written, long-range plan for library services development which has been formulated by teachers, library and audiovisual personnel and administrators, and approved by the school district board.
2. Designate a licensed library media person to direct and coordinate the district's library media program.
3. Provide library facilities within the school building and make available to all pupils a current, balanced collection of books, basic reference materials, texts, periodicals, and audiovisual materials which depicts in an accurate and unbiased way the cultural diversity and pluralistic nature of American society.
4. Provide library media services to all pupils as follows: to pupils in grades kindergarten through 6, library media services which are performed by or under the direction of licensed library and audiovisual personnel; and to pupils in grades 7 through 12, library media services which are performed by licensed library and audiovisual personnel.

**Adapted from* Wisconsin Educational Standards: A Blueprint for Excellence, *p. 57.*

Pupil Nondiscrimination

Overview*

Section 118.13 of the Wisconsin Statutes prohibits pupil discrimination and requires all Wisconsin school districts to have school board-approved selection policies. Chapter PI 9.03(1)(e), Wis. Admin. Code, which implements this statute, specifies that school boards must have policies that prohibit discrimination against pupils, including an instructional and library media materials selection policy consistent with s 121.02(1)(h), Stats. and PI 8.01(2)(h), Wis. Admin. Code.

**Adapted from* Dealing with Selection and Censorship, *p. 6.*

Wisconsin Statute

Section 118.13 Pupil discrimination prohibited. (1) No person may be denied admission to any public school or be denied participation in, be denied the benefits of or be discriminated against in any curricular, extracurricular, pupil services, recreational or other program or activity because of the person's sex, race, national origin, ancestry, creed, pregnancy, marital or parental status, sexual orientation or physical, mental, emotional or learning disability.

(2) (a) Each school board shall develop written policies and procedures to implement this section and submit them to the state superintendent as part of its 1986 annual report under s. 120.18. The policies and procedures shall provide for receiving and investigating complaints by residents of the school district regarding possible violations of this section, for making determinations as to whether this section has been violated and for ensuring compliance with this section.

(b) Any person who receives a negative determination under par. (a) may appeal the determination to the state superintendent.

(3) (a) The state superintendent shall:

1. Decide appeals made to him or her under sub. (2)(b). Decisions of the state superintendent under this subdivision are subject to judicial review under ch. 227.

2. Promulgate rules necessary to implement and administer this section.

3. Include in the department's biennial report under s. 15.04(1)(d) information on the status of school district compliance with this section and school district progress toward providing reasonable equality of educational opportunity for all pupils in this state.

(b) The state superintendent may:

1. Periodically review school district programs, activities and services to determine whether the school boards are complying with this section.

2. Assist school boards to comply with this section by providing information and technical assistance upon request.

Administrative Rule

The Education Committee of the Wisconsin State Assembly has approved Chapter PI 9, Wisconsin Administrative Code, which implements Section 118.13 of the Wisconsin Statutes. Section 118.13 prohibits pupil discrimination and is intended to insure equal treatment for all students.
PI 9 specifies the areas in which a school board must have policies and procedures to avoid discrimination. The policies must address library media, instructional, counseling, and testing materials; admissions procedures; discipline, facilities; athletics; and food service. The relevant portion of PI 9 is given below.

PI 9.03 Policies. (1) Each board shall develop policies prohibiting discrimination against pupils. The policies shall include the following areas:

(e) An instructional and library media materials selection policy consistent with s. 121.02(1)(h), Stats., and s. PI 8.01(2)(h).

Curriculum Plan

Overview*

Standard (k) requires districts to develop, implement, and monitor curriculum plans for 12 subject areas: reading, language arts, mathematics, social studies, science, health, computer literacy, environmental education, physical education, art, and music. Computer literacy and environmental education are to be integrated across the curriculum. Curriculum development is important for a number of reasons:

- The need for continuous instructional leadership which is future oriented.
- The need to restructure a subject area in the light of recent research findings or the emerging needs of students.

- The demands of excellence affecting local curriculum.
- The impact of educational technology on local curriculum.

Administrative Rule

PI 8.01(2)(k) *Curriculum plan.*

2. Each school district board shall develop, adopt and implement a written school district curriculum plan which includes the following:

a. A kindergarten through grade 12 sequential curriculum plan in each of the following subject areas: reading, language arts, mathematics, social studies, science, health, computer literacy, environmental education, physical education, art and music....

3. Each sequential curriculum plan shall specify objectives, course sequence, course content, resources, an objective process of determining whether pupils attain the specified objectives, and an allocation of instructional time by week, semester and school term. The school district board shall establish in the school district curriculum plan the allocation of instructional time, by week, semester and school term, among all subject areas.

4. Each sequential curriculum plan shall include a program evaluation method which provides that components of the sequential curriculum plan shall be monitored continuously. The overall program evaluation method shall be reviewed at least once every 5 years and revised as appropriate to ensure that pupils meet the curriculum objectives....

6. ...The computer literacy and environmental education curriculum plans shall be developed as follows:

a. Computer literacy objectives and activities shall be integrated into the kindergarten through grade 12 sequential curriculum plans.

**Adapted from* Wisconsin Educational Standards: A Blueprint for Excellence, *p. 8.*

Definition of Computer Literacy

PI 8.01(2)(k)1.a. "Computer literacy" means the ability to use computer programs to assist learning, handling information and problem solving, and the ability to make informed judgments concerning social and ethical issues involving computers and information systems.

All Libraries and Educational Institutions

Overview

Chapter 43 of the Wisconsin Statutes declares the importance of interlibrary loan and resource sharing of all types of libraries. In the age of rapidly increasing electronic resources and information found via the Internet, libraries need to work together to share their quality resources and foster literacy for all ages without discrimination as stated in Section 118.13 of the Wisconsin Statutes. Chapter 43 also delineates the duties of the State Superintendent of Public Instruction and the Division of Libraries, Technology and Community Learning.

Wisconsin Statutes:
Policy, Duties, and Records

Section 43.001 Legislative findings and declaration of policy. (1) The legislature recognizes:

(a) The importance of free access to knowledge, information and diversity of ideas by all residents of this state;

(b) The critical role played by public, school, special, and academic libraries in providing that access;

(c) The major educational, cultural, and economic asset that is represented in the collective knowledge and information resources of the state's libraries;...

(e) That the most effective use of library resources in this state can occur only through interlibrary cooperation among all types of libraries and the effective use of technology.

(2) The legislature declares that it is the policy of this state to provide laws for the development and improvement of public libraries, school libraries and interlibrary cooperation among all types of libraries.

Section 43.03. General duties of state superintendent. The state superintendent shall:

(1) Promote, assist and plan the organization, development and improvement of school library media services to provide the resources needed for teaching and learning in the schools....

(3) (a) Promote cooperation and resource sharing among public libraries, school libraries, other types of libraries and related agencies.

(b) Plan, coordinate, evaluate and set statewide priorities for the development of networks to enable library cooperation and resource sharing within this state and between this state and resource providers in other states....

(9) Develop and maintain a computer database containing bibliographic and library holding information for all types of library materials owned by libraries throughout the state to serve as a resource sharing tool and assist libraries in developing computerized bibliographic databases.

(10) Disseminate information regarding appropriate continuing education activities available to librarians, library board members, library support staff and other related professionals.

Section 43.05 General duties of the division. The division shall:

(1) Coordinate and conduct continuing education programs for librarians of school library media programs, public libraries, public library systems and institutional library programs.

(2) As it deems appropriate, assist libraries in the identification and recruitment of qualified personnel.

(3) Provide professional and technical advisory, consulting and informational services to assist:

(a) School districts establishing, maintaining or expanding school library media programs and facilities;...

(4) Collect library statistics and conduct studies and surveys of library needs throughout the state and report and publish the findings. The research shall be coordinated with statewide library planning....

(6) Recommend and distribute standards for school library programs and facilities to school library media programs,...

(11) Maintain reference and loan library to supplement the collections of all types of libraries in this state by providing specialized materials not appropriately held and information sources not provided by local libraries or readily available from other area or state-level resource providers. The library shall provide specialized information services to state agency libraries and state employees, institution libraries, and other types of libraries according to policies developed by the division. Library and information services may include development of collections of specialized materials, interlibrary loan services, reference services, provision of database search services and maintenance of a statewide database of library materials. The library may contract with state agencies and libraries to provide library material cataloging and processing services....

Section 43.30 Public library records. (1) Records of any library which is in whole or in part supported by public funds, including the records of a public library system, indicating the identity of any individual who borrows or uses the library's documents or other materials, resources or services may not be disclosed except by court order or to persons acting within the scope of their duties in the administration of the library or library system, to persons authorized by the individual to inspect such records or to libraries as authorized under subs. (2) and (3)....

Section 120.18 Annual school district report. (1) ...The annual report shall contain:

(a) The school count, showing the numbers and ages of persons who are at least 4 years old but not yet 14 years old and who reside in a school district operating only elementary grades, showing the number and ages of persons between the ages of 14 and 20 residing in a union high school district and showing the number and ages of persons between the ages of 4 and 20 residing in any other school district. Children cared for at a charitable or penal institution of this state may not be included in the report.The school district clerk may employ a competent person to take the school count. The count may be determined by using any of the following methods:

1. Conducting a school census on the preceding June 30.

2. Adding the number of persons under this paragraph who were residents of the school district and were enrolled in the school district on the 3rd Friday of September of the previous school year; plus the number of persons under this paragraph who were residents of the school district and who were enrolled in private schools, home-based private educational programs or other school districts on the 3rd Friday of September of the previous school year; plus the number or an estimate of the number of those persons under this paragraph who were residents of the school district and not enrolled in the school district, private schools, home-based private educational programs or other school districts on the 3rd Friday of September of the previous school year....

Wisconsin Statutes: Library Aids

Section 20.255 Public instruction, department of. There is appropriated to the department of public instruction for the following programs:

(2) AIDS FOR LOCAL EDUCATIONAL PROGRAMMING....

(s) *School library aids.* All moneys received as the common school fund income to be distributed as provided in ss. 24.78 and 43.70.

Section 24.78 Distribution of the common school fund income. Under article X, section 5, of the constitution the common school fund income shall be distributed to the school districts among the several towns, villages and cities of the state for the support of common schools therein, as provided in ss. 44.72 (2) (a) and 43.70.

Section 43.70 Common school fund. (1) No later than October 15 of each year, each school district administrator shall certify to the state superintendent, on forms provided by the state superintendent, a report of the number of persons residing in the school district on the preceding June 30, as reported under s. 120.18 (1) (a).

(2) Annually, within 40 days after December 1, the state superintendent shall apportion the amount appropriated under s. 20.255 (2) (s) to the school districts in proportion to the number of persons resident therein, as shown by the report certified under sub. (1).

(3) Immediately upon making such apportionment, the state superintendent shall certify to the department of administration the total amount that each school district is entitled to receive under this section and shall notify each school district administrator of the amount so certified for his or her school district. Within 15 days after receiving such certification, the department of administration shall issue its warrants upon which the state treasurer shall pay to each school district 50% of its total aid entitlement on or before January 31 and the balance on or before June 30, except that, beginning in the 1999-2000 school year, the state treasurer shall distribute each school district's aid entitlement in one payment on or before June 30. All moneys distributed under this section shall be expended for the purchase of library books and other instructional materials for school libraries, but not for public library facilities operated by school districts under s. 43.52, in accordance with rules promulgated by the state superintendent. Appropriate records of such purchases shall be kept and necessary reports thereon shall be made to the state superintendent.

Section 43.72 Library exchanges. (1) School library books and other instructional material belonging to one school district may be loaned to another school district for use in any school library of that school district.

(2) Any public library board and school board may make such exchanges and loans of books and other instructional material as are agreed upon for the purpose of increasing the efficiency of both libraries and ensuring the best service to the schools and all citizens.

(3) Any school district that borrows materials through a public library system shall reciprocate by sharing with other participating libraries materials that are not in immediate or constant demand by the school library's primary clientele, as determined by the school district.

Sample Student Research Process Checklist

Topic: The Vikings **Grade:** 7

Student Name: ______________________ Class/Hour: ______________ Date: ____________

We will research the Vikings and share our findings with our classmates in an electronic presentation.

The focus of our research will cover the following topics:

1. Daily life
2. Migrations
3. Impact on Europe (the Feudal System)
4. System of warfare:
   - Raids
   - Weapons
   - Ships
5. Contributions to history
6. Leaders of the time period

The process of doing research and communicating findings

☐ Preparatory Questions:
   - What do I already know about the Vikings?
   - What main question can I think of that will direct my research? (We will go over sample questions in class. You can use the topics listed above as ideas.)
   - What other questions can I think of that connect with my main question?

☐ Identify relevant information from books and the computer (minimum of 3 sources).

☐ Find at least 2 photographs that enhance your research. Write a bibliography entry for these photos.

☐ Write a bibliography entry for each source. Place in alphabetical order in your presentation.

☐ Arrange the notes from your research according to your topics and research questions.

☐ Code the notes and quotations so they refer to your bibliography. Enclose the first word in your bibliography and the page number in parentheses after your note. For example: (Smith - 53). If the picture or text is from the Internet, place only the first word in the bibliography in parentheses.

☐ Bring your notes and bibliography to class and prepare a presentation to share your research with your classmates.

☐ Organize your notes by preparing a storyboard.

☐ You will be given a grading checklist ahead of time so you can prepare an excellent presentation.

☐ Print out your presentation with 6 slides per page.

☐ Practice your presentation to show you are well rehearsed and prepared.

Your grade for this project will be based on the following:

1. Research process
   - Quality of questions
   - Quality of answers
   - Bibliography in correct format
   - Citations – in parentheses (Smith – 54)
   - Deadlines met
2. Presentation

Timeline:

Class 1	Receive assignments, learn about research question process
Classes 2, 3, and 4	Locate information in library, write bibliography, take notes, and code them properly
Class 5	Begin electronic presentation instruction in lab
Class 6	Learn how to add graphics
Class 7	Learn animation
Class 8	Continue working on presentations
Class 9	Begin class presentations
Class 9	Begin class presentations

Adapted with permission from the Milton (WI) School District

Rubric for Assessing Notetaking

Student Name: ______________________ Class/Hour: ________________ Date: ____________

Relevance

Advanced	My notes relate directly to my research question(s).
Proficient	Most of my notes relate to my topic and research questions.
Basic	My notes relate to my topic but do not answer all my research questions.
Minimal	My notes do not relate to my topic or research questions.

Comprehension and Paraphrasing

Advanced	I understand everything I have written in my notes; there are no words I cannot define. I used my own words except for direct quotes.
Proficient	There are words or ideas in my notes that I cannot explain, but I can get more information so they make sense to me. Some notes I copied directly from my source and did not use quotes.
Basic	When I read my notes, there are many things I do not understand. I copied most of my notes directly from my sources.
Minimal	My notes are copied from my sources, but I don't understand them.

Organization

Advanced	My notes are grouped according to each research question. The research question is written at the beginning or top of my notes.
Proficient	My notes are organized according to the source where I found the information.
Basic	My notes are organized according to when I took them.
Minimal	My notes are written as one continuous list of information.

Mechanics

Advanced	My notes refer to the bibliography. They are coded with first word in bibliography and page number(s) of new in formation. This code is placed in parentheses next to each note (for example, Smith – 53).
Proficient	I wrote the entire bibliography beneath my notes.
Basic	I wrote the author's entire name(s) under my notes along with page numbers.
Minimal	I have written the page number(s) of my source(s).

Adapted from Donham, J. Assessment of Information Processes and Products. *McHenry, IL: Follett Software, 1998. Reprinted with permission from Follett Software Co.*

Balanced Assessment/Evaluation Framework

A balanced assessment/evaluation framework is the only approach for school districts to obtain an accurate picture of student achievement. This framework provides classroom teachers, information and technology specialists, administrators, parents and the general public with valid and reliable measures of student achievement and performance. Based on the research model by Rick Stiggins of the Assessment Training Institute and the model developed by Doug Reeves of the Center for Performance Assessment, this framework emphasizes the importance of using a variety of measures to assess student learning.

Three levels or tiers to a Balanced Assessment/Evaluation Framework are recommended.

Level I defines the big assessments used to provide system data at the state, district, school, and program levels. This data is gathered through large-scale standardized assessments and provides a "snapshot" in time of evidence of what students know, understand, and are able to do. These assessments are the furthest removed from authentic student learning of all assessments used by the district, and they may or may not align directly with district academic standards and benchmarks. In Wisconsin, these include the Wisconsin Reading Comprehension Test (WRCT), the Wisconsin Knowledge and Concepts Examination (WKCE), and the upcoming Wisconsin High School Graduation Test (WHSGT).

Level II encompasses medium-scale, performance-based assessments generally developed by a school or district to specifically measure student performance on district standards and benchmarks. These teacher-developed assessments require students to complete near-authentic tasks or create near-authentic products and performances. Teacher-developed and administered scoring guides define the criteria and expectations for the quality of student work.

Level III defines all the assessments used on a regular basis at the classroom level. These are the most prevalent assessments in a district or school and are mostly teacher or team created and administered. If carefully aligned to district standards and benchmarks and written and taught curriculum, these assessments are both valid and reliable measures of student achievement. They are the closest to the student and provide the most "authentic" and timely evidence of student learning.

The following chart summarizes and illustrates the three-levels of a balanced assessment system:

Balanced Assessment Framework for Wisconsin Schools

Level I	Level II	Level III
"High-stakes" assessments	District assessments	Classroom and Information and Technology Team assessments
WKCE	Content *and* performance-based	Performance-based
WRCT	Aligned to district standards and curriculum	Aligned to state and national standards, curriculum, and instruction
WHSGT	Public scoring guides	Multiple measures
Other standardized assessments	Designed by teachers and administrators	Purpose matches type
Provides system, state, and national data	Provides school and individual student data	Provides individual student data

Adapted from Cooperative Educational Service Agency #1, West Allis, WI

■ Appendix H

Sample Collaborative Curriculum Map
Kindergarten Thematic Units for August-September

Month	Field Trips	Mathematics	Language Arts	Science	Social Studies	Health
August		**Colors/Shapes** • Visit the LMC to locate books about shapes • Listen to the library media specialist read and compare fiction and nonfiction books that focus on different shapes • Identify and use numerals on a calculator	**Letter and Word Sense; Retelling/ Listening** • Retell a story using a graphic organizer for a book read aloud in the LMC • As a group, develop inquiry questions about alphabet and sound books in the LMC • While in the computer lab, identify/ define basic computer terminology (monitor, printer, keyboard, mouse) • Begin demonstrating proper keyboard posture	**Observing Trees/Seasons** • As a class, go to a preselected Internet site that engages students in a trip through the seasons of a forest; model inquiry questions concerning the site • While in the computer lab, identify/use keyboard command keys used in software (enter, space bar, shift, arrow, escape, delete, tab, and backspace)	**Self/Family; School Rules; Orientation** • Learn the orientation process for borrowing books from the LMC • Choose picture books of personal interest	**Safety; Individual Differences** • As a class, view and discuss a video in the LMC about playground safety; draw a safe and unsafe event on the playground
September	**Public Library**	**Position and Classification** • While in the computer lab, use a computer program (such as *Millie's Math House*) to learn/ pratice positioning and classifying objects	**Speaking; Identifying Colors and Shapes** • While in the computer lab, practice identifying colors and shapes on a preselected website the LMC specialist and classroom teacher located through a quality educational portal	**Classifying/ Observing/ Comparing** • Learn how books, videos, and other resources are arranged in the LMC	**Self; Buses; Transortation** • When visiting the LMC, sing and dramatize the song *Wheels on the Bus*	**Safety** • Practice safety rules when walking to the public library to meet the children's librarian, listening to a story, getting a library card, and borrowing library resources

Adapted from Fox Point-Bayside (WI) Schools

Sample Curriculum Alignment Worksheet

Content Standard B: Information and Inquiry

No	Wisconsin Performance Standard (Performance Indicators)	Grade	Rate	Local Curriculum (Subject/Courses)
Performance Standard B.1: *Students will define the need for information.*				
B.4.1	identify the information problem or question to be resolved			
	determine what is already known about the information problem or question			
	formulate initial questions to define what additional information is needed			
	determine a specific focus for the information search questions			
B.8.1	identify the information problem or question to be resolved			
	relate what is already known to the information need			
	formulate general and specific research questions using a variety of questioning skills			
	revise and narrow the information questions to focus on the information need			
B.12.1	state the information problem or question in clear and concise terms			
	relate prior knowledge to the problem or question			
	develop specific research questions or a thesis statement based on the nature, purpose, and scope of project			
	conduct a preliminary search to determine if the research questions are/thesis statement is clear and searchable; refine and revise, if necessary			
	conduct a preliminary search to determine if the research questions are/thesis statement is clear and searchable; refine and revise, if necessary			
Performance Standard B.2: *Students will develop information-seeking strategies.*				
B.4.2	identify possible sources of information, including print, nonprint, electronic, and human resources			
	evaluate possible sources based on currency, genre, and relevance to the topic			
	select more than one resource, when appropriate			
	identify keywords and phrases for each information source			
	recognize different ways to organize ideas, concepts, and phrases			
	list steps to follow in carrying out the information search			
B.8.2	identify relevant sources of information including print, nonprint, electronic, human, and community resources			
	evaluate possible sources of information based on criteria of timeliness, genre, point of view, bias, and authority			
	select multiple sources that reflect differing or supporting points of view			
	identify and select keywords and phrases for each source, recognizing that different sources use different terminology for similar concepts			
	organize ideas, concepts, and phrases using webbing, outlines, trees, or other visual or graphic tools			
	focus search strategies on matching information needs with available resources			

**Rating key: 0 = not covered in local curriculum, 1 = slightly covered, 2 = moderately covered, 3 = well covered*
Note: The entire collection of worksheets is available on Integrating Wisconsin's Information and Technology Literacy Standards into the Assessed Curricular Areas: A CD-ROM Planning Guide.

Chapter PI 34 – Administrative Rules for Licenses

Wisconsin's new administrative rules regarding educational licensure become effective July 1, 2004. Persons who hold licenses issued prior to that date will be able to renew their licenses even though their current license will no longer available after that date.

PI 34.32 Administration Categories. **(1)** GENERAL. Licenses may be issued in the administration categories listed under subs. (2) through (10) at the early childhood through adolescent level to individuals who are endorsed by an institution as having completed an approved program that certifies competence in the standards listed in s. PI 34.03 and who meet the requirements under this subchapter. Specific competencies for the separate license categories shall be determined by the state superintendent based on recommendations made by the professional standards council under s. 115.425, Stats. A license under subs. (2) through (5), (8), or (9) is required for individuals who supervise and evaluate other professional staff. An applicant for a license under this subchapter shall meet all of the following requirements:

(a) *Degree.* 1. ...Except as specified under subd. 2, for all other licenses under this subchapter, the applicant shall have completed an approved master's degree program or the equivalent in the area of administration; or a master's degree or the equivalent and an approved program leading to a license under this subchapter....

(b) *Professional education.* 1. Except as specified in subd. 2., the applicant shall meet one of the following requirements:

a. The applicant shall hold or be eligible to hold any license to teach at the early childhood through adolescence level or shall have completed an approved program leading to a license to teach....

(c) *Experience.* 1. Except as specified in subd. 2., the applicant shall have completed one of the following:

a. Three years of successful full-time classroom teaching at any of the grades at the early childhood through adolescence level....

(9) INSTRUCTIONAL LIBRARY MEDIA SUPERVISOR. An instructional library media supervisor license is required for any person who is responsible for supervising and evaluating professional staff in addition to directing the district library media program. A license may be issued to an applicant who has 3 years of successful school library media experience, who has completed an approved program for instructional library media supervisor, and who has the institutional endorsement.

(10) INSTRUCTIONAL TECHNOLOGY COORDINATOR. An instructional technology coordinator license is required for any person who is responsible for the direction and administration of the instructional computing and other instructional technology at the district level. A license may be issued to an applicant who has completed an approved program for instructional technology coordinator and who has the institutional endorsement for the license.

PI 34.33 Supplementary categories. Except as specified under sub. (1) (c), in order to receive a license issued under a supplementary category under this subchapter, an individual shall hold or be eligible to hold a teaching license issued by the department under subch. VII. Licenses under this subchapter may be issued in the following categories:

(5m) INSTRUCTIONAL LIBRARY MEDIA SPECIALIST. (a) In order to qualify for an instructional library media specialist license, an applicant shall complete a [an approved] program that incorporates Wisconsin's model academic standards for library media, including all of the following strands:

1. Media and technology.
2. Information and inquiry.
3. Independent learning.
4. The learning community.

(b) In order to receive a professional educator license under this subsection, an applicant shall have a master's degree or the equivalent in an approved library media services program.

Information Resources and Learning Tools

This chart lists some of the information resources and learning tools that students will need to become proficient in the competencies identified in *Wisconsin's Model Academic Standards for Information and Technology Literacy*.

Grade 4	Grade 8	Grade 12
To meet Wisconsin Information and Technology Literacy Standards for Grade 4, students need to be proficient with the following learning tools: • Video programs • Magazines • Audiocassettes • CD-ROM • DVD • Newspapers • Books • Reference books • Electronic encyclopedias • Primary sources • Internet • Still, video, digital cameras • Scanners • Calculators • Audio equipment • Video equipment • Indexes • Almanacs • On-line catalogs • Encyclopedias • E-mail • Multimedia • Maps • Atlases • Globes • Computer software (including keyboarding, drawing, word processing, simulation, virus detection, database, spreadsheet, browser, and graphics software)	To meet Wisconsin Information and Technology Literacy Standards for Grade 8, students need to be proficient with the following learning tools: • Video programs • Magazines • Audiocassettes • CD-ROM • DVD • Newspapers • Books • Reference books • Electronic encyclopedias • Primary sources • Internet • Still, video, digital cameras • Scanners • Calculators • Audio equipment • Video equipment • Indexes • Almanacs • On-line catalogs • Encyclopedias • E-mail • Multimedia • Maps • Atlases • Globes • Computer software (including keyboarding, drawing, word processing, simulation, virus detection, database, spreadsheet, browser, and graphics software) • Intranet • Software appropriate for local curriculum/national, state, and local standards in a variety of formats • Content-specific tools (for example, probes, measurement sensors) • Graphing calculators • Video cameras and editing equipment • Multimedia computers with editing software • Productivity software (including presentation, communication, desktop publishing, image manipulation, and graphic organizer software)	To meet Wisconsin Information and Technology Literacy Standards for Grade 12, students need to be proficient with the following learning tools: • Video programs • Magazines • Audiocassettes • CD-ROM • DVD • Newspapers • Books • Reference books • Electronic encyclopedias • Primary sources • Internet • Still, video, digital cameras • Scanners • Calculators • Audio equipment • Video equipment • Indexes • Almanacs • On-line catalogs • Encyclopedias • E-mail • Multimedia • Maps • Atlases • Globes • Computer software (including keyboarding, drawing, word processing, simulation, virus detection, database, spreadsheet, browser, and graphics software) • Intranet • Software appropriate for local curriculum/national, state, and local standards in a variety of formats • Content-specific tools (for example, probes, measurement sensors) • Graphing calculators • Video cameras and editing equipment • Multimedia computers with editing software • Productivity software (including presentation, communication, desktop publishing, image manipulation, and graphic organizer software) • Distance learning • Video conferencing • Integrated productivity software • Application suite software • Listservs • Webpage development tools

WESSAS Codes for Wisconsin's Common School Fund

Purchases of library media materials using Common School Fund monies are very specific. Answers to "Frequently Asked Questions" are online at www.dpi.state.wi.us/dpi/dfm/sfms/csfqanda

School districts can spend Common School Fund monies for the following items:

	WESSAS Object Code
Audiovisual materials	#431
Library books	#432
Newspapers	#433
Periodicals	#434
Programmed microcomputer software	#435
Microfilm	#438
Reference books	#439

CSF monies cannot be used to purchase textbooks or equipment, nor can they be used to rent items. The CSF may be used only for the items listed above, and the items must be part of the collection of materials ordinarily housed in the library or instructional media center (WESSAS Function Code #222 200).

Comprehensive Technology Plan Checklist

The following is a checklist to be used to develop and evaluate technology plans. The checklist was developed from the *Wisconsin Educational Technology Plan PK-12*, Appendix O, which is a suggested table of contents for a local school district technology plan. The checklist has been compared to section 3135 of the Elementary and Secondary Education Act (ESEA). This federal law outlines the legal requirements for plans submitted for competitive grants from the Technology Literacy Challenge Fund (TLCF), a federal grant program. The numbers in parentheses (*) are those parts of section 3135 of ESEA that are met in specific sections of Appendix O. If your technology plan includes all of the items listed, and is for **at least three (3) years**, and is approved using this checklist, it will qualify your district to apply for any state or federal grant at this time.

District ______________________________ **Date Completed** ______________

Contact Person __________________________ **Plan Dates** ________________

☐ **Introduction** - Ties the plan to school reform or the school district's strategic plan ***(I)***

☐ **Background Information** ***(II)***
- ___ School/district and community demographics
- ___ Overview of the planning process employed including a list of committee members
- ___ Committee Includes representation from all stakeholder groups
- ___ Committee identifies community resources
- ___ District educational technology *Vision* and *Mission* statements are included

☐ **Program Goals & Educational Technology Initiatives In Support of Education Improvement** ***(III, I-A, I-B)***
- ___ Instructional and Curricular goals and initiatives are well developed
- ___ Communication and information access goals and initiatives outlined
- ___ Staff Competency goals in support of student learning and reform initiatives are listed
- ___ Administrative and management goals and initiatives identified

☐ **Current Status**
- ___ Includes assessment of student and staff technology skills, knowledge, and attitudes
- ___ Includes the following inventories:
  - ___ *Software* ___ *Hardware* ___ *Facilities* ___ *Networking & Telecommunications Capacities*
- ___ Outlines current status of curriculum and educational technology initiatives in relationship to educational improvement
- ___ Includes review of existing professional development activities and structures
- ___ Includes assessment of current educational technology staffing

☐ **Technology Design** ***(I-E)***

Software priorities:
- ___ Administrative and management
- ___ Communications and information access
- ___ Instructional and curricular

Hardware, Facilities, and Network priorities:
- ___ Hardware: Workstations and Peripherals
- ___ Facilities: Network design
- ___ Building and classroom wiring standards
- ___ Implementation issues
- ___ Operations, Maintenance, and Upgrade priorities

☐ **Educational Technology Implementation Action Plan** *(Leadership, Activities, Timeline, Policy, Budget)* ***(I-D, I-F, I-G, I-H)**

- ___ Software procurement
- ___ Hardware, Facilities, and Network acquisitions/implementation
- ___ Operations, Maintenance, and Upgrades
- ___ Professional Development
- ___ Additional human resources in support of technology
- ___ Funding sources
- ___ Budget summary

☐ **Monitoring, Evaluation, and Revision of Educational Technology Plan** ***(IV)**

- ___ Monitoring and evaluation process
- ___ Incorporation of evaluation information for ongoing planning
- ___ Process for reporting to stakeholders
- ___ Process and timeline for ongoing, *long-term* planning

☐ **Adult Literacy Component** ***(I-C)**

Comments:

[If you are developing or revising your district technology plan, it is recommended that you also check all funding sources from both federal and state programs for their current requirements for technology plans and include them in one comprehensive plan.]

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Levels of Technology Implementation (LoTI) Framework™

Level 0: Non-use

A perceived lack of access to technology-based tools or a lack of time to pursue electronic technology implementation. Existing technology is predominately text-based (for example, ditto sheets, chalkboards, overhead projectors).

Level 1: Awareness

The use of computers is generally one step removed from the classroom teacher (for example, integrated learning system labs, special computer-based pull-out programs, computer literacy classes, central word processing labs). Computer-based applications have little or no relevance to the individual teacher's operational curriculum.

Level 2: Exploration

Technology-based tools generally serve as a supplement to the existing instructional program (for example, tutorials, educational games, simulations). Electronic technology is employed either as extension activities or as enrichment exercises to the instructional program and generally reinforce lower cognitive skill development (for example, knowledge, comprehension, application).

Level 3: Infusion

Technology-based tools including databases, spreadsheet and graphing packages, multimedia and desktop publishing applications, and Internet use augment selected instructional events (for example, science kit experiment using spreadsheets/graphs to analyze results, telecommunications activity involving data sharing among schools). The learning activity may or may not be perceived as authentic by the student; emphasis is, nonetheless, placed on higher levels of cognitive processing (for example, analysis, synthesis, evaluation).

Level 4A: Integration (Mechanical)

Technology-based tools are integrated in a mechanical manner that provides rich context for students' understanding of the pertinent concepts, themes, and processes. Heavy reliance is placed on prepackaged materials and outside interventions that aid the teacher in the daily operation of the instructional curriculum. Technology (for example, multimedia, telecommunications, databases, spreadsheets, word processing) is perceived as a tool to identify and solve authentic problems perceived by students as relating to an overall theme/concept. Emphasis is placed on student action and issues resolution that require higher levels of student cognitive processing.

Level 4B: Integration (Routine)

Teachers can readily create Level 4 (Integrated units) with little intervention from outside resources. Technology-based tools are easily integrated in a routine manner that provides rich context for students' understanding of the pertinent concepts, themes, and processes. Technology (for example, multimedia, telecommunications, databases, spreadsheets, word processing) is perceived as a tool to identify and solve authentic problems relating to an overall theme/concept.

Level 5: Expansion

Technology access is extended beyond the classroom. Classroom teachers actively elicit technology applications and networking from business enterprises, governmental agencies (for example, contacting NASA to establish a link to an orbiting space shuttle via Internet), research institutions, and universities to expand student experiences directed at problem solving, issues resolution, and student involvement surrounding a major theme/concept.

Level 6: Refinement

Technology is perceived as a process, product (for example, invention, patent, new software design), and tool toward students solving authentic problems related to an identified "real-world" problem or issue. Technology, in this context, provides a seamless medium for information queries, problem solving, and/or product development. Students have ready access to and a complete understanding of a vast array of technology-based tools to accomplish any particular task.

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Glossary

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Academic Standard. A standard that specifies what students should know and be able to do in a specific subject area at a specific time in their schooling.

Acceptable Use Policy (AUP). A school or organization's official policy statement regarding the use of the Internet or other computer networks.

Accountability System. A system that provides evidence that a program or process is achieving its stated goals. Various approaches or systems can be used to evaluate programs or processes for the purpose of accountability.

Action Research. Research concerned with gathering evidence to make decisions at the local or classroom level about the effectiveness of instructional strategies, instructional materials, or other programming issues.

Administrative Computing. The computing resources, activities, services, and technologies concerned with the administrative, management, reporting, and operational functions of a school district (as opposed to its learning and instructional functions). Examples of computerized administrative functions might include bus scheduling; heating, ventilating, and air conditioning (HVAC); food services; student attendance; and state reporting.

Administrative Team. In large school districts, the administrative team consists of the school superintendent and immediate deputies, associates, and assistants; in smaller school districts, all school principals are often included.

American Association of School Librarians (AASL). A division of the American Library Association.

American Library Association (ALA). The oldest and largest library association in the world with members in academic, public, school, government, and special libraries; ALA is the voice of America's libraries and the people who depend on them.

Assistive Technologies. The application of devices, tools, and services that enable students with disabilities to function or learn better in school.

Association for Educational Communications and Technology (AECT). An international professional association dedicated to improving instruction through the effective use of media and technology.

Authentic Learning Task. A performance task designed to elicit from students their application of a broad range of knowledge and skills to resolve a complex "real world" problem.

Bandwidth. The amount of the electromagnetic spectrum that a given signal occupies, usually expressed in kilohertz (thousands of hertz or Khz) or megahertz (millions of hertz or Mhz); it may also refer to the amount of data that can be carried by a channel, usually expressed in bits per second.

Benchmarks. Specific standards for judging performance; in Wisconsin, benchmarks are locally developed, grade-level performance indicators used to measure students' proficiency in meeting specific academic standards.

Bibliography. A list of works (books, journal articles, websites, media resources, and so forth) on a particular subject, usually arranged alphabetically by author.

Browser. A software program used to view World Wide Web pages; also called a web browser.

Change Orders. An order to a contractor or construction firm to change the construction document (blueprint) and, ultimately, some part of the facility being built. Most change orders occur because of a problem or oversight in the original design, discovered during construction.

Checklist. A step-by-step guide or worksheet that helps students attend to or address all aspects of a research process or project activity.

Children's Internet Protection Act (CIPA). A federal law, effective December 2000, requiring all school districts receiving discounted rates for Internet access or other federal grants to "filter and block" Internet content that is inappropriate, obscene, or harmful to children.

Citation. A reference or note referring to a document or file from which text is quoted.

Collaboration. A generic term that refers to cooperative planning, development, and implementation between and among educators.

Common School Fund Library Aid. An annual entitlement program that distributes the interest earned on loans made from the Common School Fund (CSF) to public school districts for purchasing school library materials. It is one of a number of state trust funds established by the Wisconsin Constitution.

Communication Software. A program that connects computer users to other computers or networks to establish communication with that computer or network.

Compact Disc-Read Only Memory (CD-ROM). A computer storage medium, similar to the audio compact disc, that can hold more than 600 megabytes of read-only digital information.

Competencies. The skills, concepts, and attitudes needed by all students to succeed in school and in the world of work.

Comprehensive Educational Technology Plan. A 3-5 year technology plan required of all school districts receiving federal grants or other funding for technology. Plans are submitted to and approved by the Wisconsin DPI based on federal and state guidelines.

Conferencing. As students do research or work on projects, a member of the teaching and learning team can inquire about progress by asking questions specific to students' tasks and providing feedback and guidance. More formal conferencing can occur at the end of a teaching sequence, asking students to reflect on their work and suggest changes for future projects.

Constructivism. An approach to teaching and learning based on the premise that cognition (learning) is the result of "mental construction"; that is, students learn by fitting new information together with what they already know.

Content Knowledge. A primary focus on subject matter, not on the student or the learning process.

Content Standards. Standards defining what students should know and be able to do.

Cooperative Educational Service Agency (CESA). A nonprofit organization representing contiguous school districts in a region of the state, created by the Wisconsin legislature to address educational needs by sharing the costs of services. Wisconsin's 12 CESAs provide a variety of services to their school districts.

Copyright. The property right granted by a government to the originator (for example, an author or inventor) of intellectual property, granting sole rights to reproduce, copy, print, duplicate, publish, sell, and distribute any section or part of an existing original work (book, article, film, video, and so forth).

Curriculum. A sequential program, developed by local school districts, designed to prepare students to meet academic standards. It consists of activities and lessons at each grade level, instructional materials, and various instructional techniques. Curriculum specifies the details of day-to-day schooling at the local level.

Curriculum Map. A tool, based on the school calendar, for teachers to record what they are actually teaching (for example, topics or units) to students during each week of the school year. A curriculum map provides a "snapshot" of the operational curriculum—at any level, in any classroom—and contains valuable data for potential collaborative units, collection development, and curriculum support.

Curriculum Mapping. A process used by schools and districts to reform and improve curriculum by gathering data on what all teachers are working on with their students throughout the course of a school year.

Cyberspace. The collection of computers located on multiple networks that communicate with other computers across the Internet.

Database. A listing or collection of information usually organized with searchable elements or fields; for example, a library catalog (or database) that can be searched by author, title, or subject.

Datacasting. One aspect of interactive digital television that lets broadcasters transmit computer-like (digital) data along with a video program to a television receiver. Teachers can view full-screen, digital instructional television blended with interactive features similar to that found on a CD-ROM or website.

Descriptor. A synonym for a subject heading or keyword.

Desktop. The background area on a computer screen, usually containing an icon for the hard drive (to store files) and trash can (to remove files). Folders, files, applications, and a working document may also appear on the desktop.

Desktop Conferencing. The process by which an individual or small group uses a personal computer, small video camera, microphone, and special software to communicate (or "teleconference") with another individual, individuals, or a small group.

Desktop Publishing. The process of using a computer and special software to produce a document with complex formatting and layout styles (for example, newsletters, brochures, or advertisements).

Differentiated Staffing. The practice of assigning different instructional roles, assignments, or positions rather than classifying all teachers (or library media specialists) alike.

Digital Television. The Federal Communications Commission is requiring all television broadcasters to move to the digital environment used by computers, allowing for the production and distribution of alternative forms of television and new uses of digital spectrum. High definition television (HDTV) offers movie-quality video and CD-quality sound, using most of the broadcast spectrum. When HDTV is not in use, broadcasters can concurrently distribute multiple channels of standard definition television (called multicasting) and/or data (datacasting), greatly expanding programming and learning opportunities on public television statewide.

Digital Video Disk (DVD). A digital storage medium – the same physical size as a CD-ROM disk – that can store massive amounts of data including graphics and full motion video.

Distance Learning or Distance Education. Instruction that takes place when the teacher and students are geographically separated. Telecommunications technologies link them on an interdistrict, intrastate, interstate, or international basis.

Document. What a computer user creates with an applications program. Documents store information that the user enters with help from an application software program.

Domain Name. A website's address or uniform resource locator (URL).

Electronic Mail (e-mail). A message sent electronically from one person's computer to another person's computer.

E-Portfolio. A collection of student work, maintained in an electronic format rather than as printed copies, chosen to exemplify and document a student's learning progress.

E-Text. An electronic version of a textbook.

Educational Specifications. Specifications which define and detail the educational program to be delivered in a new or remodeled facility. Educators establish the specifications to guide the architectural firm and others involved with the design of a facility and the selection of technology and other instructional solutions.

Educational Technology Plan. See Comprehensive Educational Technology Plan.

Electronic Literacy. The ability to search, retrieve, organize, employ, and evaluate information derived from electronic information resources.

Equity. A reference to the availability of instructional technology for all students regardless of socioeconomic status, culture, locale, gender, age, or race.

Enhancing Education Through Technology (EETT). A federal grant program administered by the U. S. Deapartment of Education, designed to help schools integrate technolgy into their educational programs and provide training for teachers on how to integrate technology into the curriculum and classroom instruction. This program replaced the Technolgy Literacy Challenge Fund (TLCF).

Fair Use. Provisions in the U. S. Copyright Code providing for the limited use of copyrighted materials for educational purposes.

File Server. A large storage device that stores files and software shared by users on a network.

Filtering and Blocking Technology. In K-12 schools, software or hardware solutions to remove (filter) or stop (block) access to Internet material that is inappropriate, obscene, or harmful to children (see also Children's Internet Protection Act).

Flexible Schedule. A method of structuring library media center usage so blocks of time exist for students to come individually and/or in small groups for independent research and recreational pursuits. A flexible schedule also provides library media specialists time for planning collaboratively with teachers as well as working with students on a formal or informal basis.

Full-Text Database. An electronic information resource containing entire documents.

Gateway. A device connecting two dissimilar networks that adds security, flow control, and protocol conversion. Gateways typically (1) handle protocol conversion operations across a wide spectrum of communications functions or layers and (2) require software programming and central management.

Hardware. The physical equipment directly involved in performing communications or data-processing functions.

Head-End. A central point or hub in broadband networks that receives signals on one frequency band and retransmits them on another. Every transmission must go through the head-end in a broadband network. In cable-access television technology, the head-end is the cable system control center, processing signals and sending them for distribution down the cable system.

Home Page. The first or introductory page that appears when accessing a World Wide Web site; it often contains a table of contents for the website.

Hypermedia. A software program that contains dynamic links to other media, such as audio, video, or graphics files. The World Wide Web is made up of hyperlinked web pages.

Hypermedia Program. A software program that provides dynamic links and seamless access to text, graphics, audio, and video images.

Hypertext. A system of writing and displaying text that enables it to link at several levels of detail as well as to related documents or sites. Hypertext uses key words or phrases in a WWW page that are "linked" electronically to other websites or pages on the Internet.

HyperText Markup Language (HTML). A computer language used to design or write webpages or websites.

Information. Knowledge communicated or received concerning a particular fact or circumstance. Such facts, data, images, or sounds may be unorganized or even unrelated.

Information and Technology Literacy. The knowledge and skills essential for students to access, evaluate, and use information and technology.

Information and Technology Literacy Standards. Wisconsin academic standards that identify and define the knowledge and skills essential for all students to access, evaluate, and use information and technology (refers to *Wisconsin's Model Academic Standards for Information and Technology Literacy*). These standards are designed for integration into all subject areas.

Information and Technology Program. The program in PreK-12 schools and districts that provides instruction, resources, learning (technology) tools, and services to assist students and staff in becoming critical thinkers in the pursuit and use of ideas and information. An integrated or unified school library media and instructional technology program promotes and facilitates integrating information and technology literacy competencies into the instructional program for all students. (Note: In this document, the terms "information and technology program" and "library media and instructional technology program" are interchangeable.)

Information Literacy. The ability to access, evaluate, and use information from a variety of sources.

Inquiry. A process through which students investigate a problem, devise and work through a plan to solve the problem, and propose a solution to the problem.

Instructional Technology. The use of computers and other technologies as an integral part of the curriculum and instructional program for students.

Intellectual Freedom. The right under the U.S. Constitution of any person to read or express views which may be unpopular or offensive to others, provided they are not libelous.

Intellectual Property Rights. The concept that the creator of an idea or expression of an idea in any format retains ownership of that idea or expression.

Interface. The way in which computers communicate with external devices or with the user (for example, printer interface, human interface, and user interface).

International Society for Technology in Education (ISTE). An international professional association for computer and technology educators, **MIS** professionals, and technology directors and coordinators.

Internet. The worldwide network of government, business, and university computers. Currently, there is only one Internet, but owing to the rapidly growing number of websites and slowing access speeds, others are planned.

Internet Safety Policy. The Children's Internet Protection Act of 2000 requires that all Internet acceptable-use policies must now contain an Internet Safety Policy that addresses the following:

- access by minors to inappropriate material on the Internet and World Wide Web
- the safety and security of minors when using electronic mail, chat rooms, and other forms of direct electronic communications
- unauthorized access, including so-called "hacking" and other unlawful activities by minors online
- unauthorized disclosure, use, and dissemination of personal identification information regarding minors
- measures designed to restrict minors' access to materials harmful to them
- a plan to monitor minors' use of the Internet in school

Intranet. A private network inside a company or organization that uses the same kinds of software found on the Internet but is strictly for internal use.

Journaling. A strategy employed to get students to focus on the process as well as the content of their learning or project. Students' journal entries can give teachers a sense of how well students understand the research process and how well they are doing.

Keyword. A significant identifying word from the title, subject, or content of a particular document or file.

Keyword Searching. The use of significant identifying words to seek entries for all documents or publications on a particular subject that are filed in a catalog, bibliographic record, or electronic resource.

Knowledge. The acquaintance with facts, truths, or principles as the result of study or investigation; familiarity with a particular subject or branch of learning; an organized body of information or the comprehension or understanding resulting from acquiring or organizing a body of facts.

Local Area Network (LAN). A number of computers and other peripheral devices connected to a file server for the purpose of sharing resources, such as software applications, files, peripherals, and services. A LAN usually constitutes a network in a single room or building.

Local Education Agency (LEA). In Wisconsin, the official designation or title of a local school district.

Learning Tools. The equipment and technology needed for accessing, using, producing, and presenting information, and the processes and skills needed to use the equipment and technology effectively for student achievement.

Library Media and Instructional Technology Program. The program in PreK-12 schools and districts that provides instruction, resources, learning (technology) tools, and services to assist students and staff in becoming critical thinkers in the pursuit and use of ideas and information. The library media and instructional technology program is an integrated or unified program that promotes and facilitates the integration of information and technology literacy competencies into the instructional program for all students. In this document, the term "information and technology program" and "library media and instructional technology program" are used interchangeably.

Listserv. A powerful software program for combining and automating mailing lists and discussion groups on a computer network or the Internet; a form of one-to-many communication using e-mail.

Long-Range Plan for Library Services. In Wisconsin, PI 8.01(2)(h), the administrative rule for Wisconsin Statute 121.02(h), requires that "[t]here shall be on file a written school board-approved long-range plan for library services development formulated by teachers, library and audiovisual personnel, and administrators."

Media. Formats of communication (for example, CD-ROMs, newspapers, laserdiscs, magazines, films, the Internet) which can be grouped as print, nonprint, or electronic.

Media Literacy. The ability to conduct a critical analysis of images and the sounds, special effects, and text that accompany them. It also aims to provide students with the ability to create media and multimedia products for specific purposes and audiences.

Media Retrieval Network. An audio and video network for sending and receiving analog audiovisual resources to a remote site, normally a classroom or large-group instructional area.

Microfiche. A flat sheet of plastic containing microimage information on a specific subject and requiring a microfiche reader or printer to access its content.

Microforms. Any materials, film, or paper – printed or photographic – containing microimages of information, such as text or graphics, too small to be read without magnification.

Multimedia. A general term that usually refers to nonprint media which uses a combination of sound, video, animation, pictures, and text.

Navigate. To move around on the World Wide Web by following hypertext paths from document to document appearing on different computers linked to the Web and Internet.

Network. Two or more interconnected computers that allow users to share files and peripheral devices (for example, printers, servers, storage devices).

Network Manager(s). The individual(s) responsible for planning, implementing, and managing computer networks.

No Child Left Behind (NCLB). The federal legislation passed in 2002 which reauthorized the Elementary and Secondary Education Act (ESEA) of 1965.

Nonprint Media. Audio and video formats of communication (for example, films, videotapes, audiocassettes).

North Central Regional Educational Laboratory (NCREL). One of ten regional educational laboratories, NCREL provides research-based resources and assistance to educators, policymakers, and communities in Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin. The not-for-profit organization specializes in educational applications of technology.

Online. The state a computer is in when it is connected to another computer or server via a network; that is, one computer communicating with another computer.

Online Catalog. A computerized list that enables users to access the record of holdings of a particular library, library network, or information agency or service.

Paradigm. A term popularized by author Thomas Kuhn in *The Structure of Scientific Revolutions*, in which he suggested that our world view is conditioned by a prevailing model ("paradigm"). He suggested that knowledge advances because of new fundamental insights that allow completely different ways of thinking about things ("paradigm shifts").

Performance Standard. A standard that describes ways in which students can demonstrate that they have acquired the knowledge or skills contained in an academic standard.

Performance Tasks. Activities, exercises, or problems that require students to show what they know or are able to do.

Portfolio. A collection of student work chosen to exemplify and document students' academic progress over time.

Presentation Technologies. Computer, software, and video technologies used to present audio and visual information to small or large audiences.

Primary Source. First-hand information or information in an original or first-published format (see also Secondary Source).

Process Skills or Competencies. The process employed to solve problems or obtain results.

Professional Development. An education plan or program designed to increase an individual's level of knowledge and skills necessary to successfully perform an assignment.

Proficiency Standard. A standard that indicates students' level of knowledge and skills – advanced, proficient, basic, or minimal – relative to Wisconsin's academic standards.

Program. A set of instructions describing operations for a computer to perform or accomplish a task or tasks (commonly referred to as software).

Research. Careful study, investigation, and experimentation aimed at discovering or interpreting facts to create new knowledge or understandings on the part of the researcher.

Rubric. A scoring "tool" that lists the criteria for a product or presentation. In Wisconsin, four achievement levels – minimal, basic, proficient, and advanced – are recommended in a rubric design to assess proficiency in meeting the state's academic standards.

School Improvement Plan. A plan for refining and remodeling school practices with the goal of improving the quality of education for all students.

Scope and Sequence. A curricular concept that refers to what is taught (scope), especially as one subject relates to another, and when it is taught (sequence) relative to a longitudinal plan for introducing and building on students' knowledge of specific subject matter.

Search Engine. An Internet site and software program that allows for keyword searching of on-line information.

Search Strategy. The organized plan by which an on-line user conducts a search of an electronic information resource, usually involving Boolean operators to increase search precision.

Secondary Source. Information contained in, or taken from, general or compiled published sources (see also Primary Source).

Software. A set of instructions, procedures, and related documentation on a disk, file, or CD-ROM which, when put into a computer, causes it to perform specific actions or functions.

Staff Development. Any activity that promotes the personal or professional growth of teachers and other instructional staff (see also Professional Development).

State Education Agency (SEA). Any state agency primarily responsible for supervising public elementary and secondary education. In Wisconsin, the Department of Public Instruction is the SEA.

Synthesize. The process of combining parts or elements to form a coherent whole; to combine so as to form a new, more complex entity.

Technology. The application of knowledge, tools, and skills to solve practical problems and, thus, extend human capabilities. Technology is best described as process but is more commonly known by its products and their effects on society.

Technology Literacy. The ability to use, manage, and understand technology.

Technology Literacy Challenge Fund (TLCF). A federal grant program, administered by the U.S. Department of Education, designed to help schools integrate technology into their educational programs and provide training for teachers on how to integrate technology into the curriculum and into classroom instruction. This program ended with the Fiscal Year 2001 funding cycle. A New program, Enhancing Education through Technology (EETT), will take the place of the TLCF Program.

Technology Plan. See Comprehensive Educational Technology Plan.

Telecommunications. The exchange of voice, video, or data through digital or analog electromagnetic or electronic signals (for example, radio, telephone, television, facsimile, or computer/modem).

Teleconference. Communication via audio, video, or computer connecting two or more groups in separate locations.

Uniform Resource Locator (URL). The address and method used to locate a specific resource or single document on the World Wide Web or Internet.

Video Conferencing. Using video and audio signals to link participants at different and remote locations for a specific purpose.

Video-On-Demand. Immediate access to selected film, video, or television programming either at the desktop or on a television receiver via a digital media-retrieval network.

Virtual Learning. A learning experience "mediated" or "intermediated" by electronic information and telecommunication technologies; also learning provided by a highly realistic computer software simulation, a distance learning source, or programming or courses via the Internet.

Virtual Reality. Highly realistic computer simulations that use three-dimensional (3-D) displays to create the impression of being inside a place.

Visual Literacy. The ability to recognize and understand ideas conveyed through visible actions or images.

Webpage. A single on-line document or screen containing information and accessible on the World Wide Web (WWW).

Website. An entire location or site of an organization, agency, business, or individual accessible on the World Wide Web; a website often contains several webpages.

Wireless Technologies. The networking of computers and other technologies using wireless access points and network interface cards rather than physically connecting them together with metal or fiber optic cables.

Wisconsin Department of Public Instruction (DPI). The state agency charged with providing direction and technical assistance for public elementary and secondary education in Wisconsin. It offers a broad range of programs and services to local school administrators and staff. The DPI distributes state school aids and administers federal program funds that supplement local tax resources, improve curriculum and instruction and school operations, ensure education for children with disabilities, offer guidance and counseling, and develop school and public library resources.

Wisconsin Educational Communications Board (WECB). A state agency that plans, develops, constructs, and operates statewide public radio, public television, and educational communication systems.

Workstation. A device, often a personal computer, that interfaces between a user and a file server or host computer.

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